# STIC Search Report
EIC 1700

## STIC Database Tracking Number: 214289

**TO: Ben Sackey**
**Location:** Remsen 5B31
**Art Unit : 1624**
**February 20, 2007**

**Case Serial Number: 10/805983**

**From: Kathleen Fuller**
**Location: EIC 1700**
**REMSEN 4B28**
**Phone: 571/272-2505**
**Kathleen.Fuller@uspto.gov**

## Search Notes

# STIC Search Results Feedback Form

## EIC17000

Questions about the scope or the results of the search? Contact ***the EIC searcher or contact:***

**Kathleen Fuller, EIC 1700 Team Leader**
**571/272-2505 REMSEN 4B28**

## Voluntary Results Feedback Form

- *I am an examiner in Workgroup:* ☐ *Example: 1713*
- *Relevant prior art **found**, search results used as follows:*
  - ☐ 102 rejection
  - ☐ 103 rejection
  - ☐ Cited as being of interest.
  - ☐ Helped examiner better understand the invention.
  - ☐ Helped examiner better understand the state of the art in their technology.

*Types of relevant prior art found:*

- ☐ Foreign Patent(s)
- ☐ Non-Patent Literature
  (journal articles, conference proceedings, new product announcements etc.)

- *Relevant prior art **not found:***
  - ☐ Results verified the lack of relevant prior art (helped determine patentability).
  - ☐ Results were not useful in determining patentability or understanding the invention.

**Comments:**

**Drop off or send completed forms to EIC1700 REMSEN 4B28**

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Ms Fuller

Scientific and Technical Information Center

# SEARCH REQUEST FORM

Requester's Full Name: BEN SACKEY Examiner #: 73489 Date: 01/25/07

Art Unit: 1624 Phone Number: 2-0704 Serial Number: 10/805,983

Location (Bldg/Room#): Rem 5B31 (Mailbox #): _____ Results Format Preferred (circle): ~~PAPER~~ DISK

**********

To ensure an efficient and quality search, please attach a copy of the cover sheet, claims, and abstract or fill out the following:

Title of Invention: Converting propylene in an Oxygenate - contaminated propylene Stream etc

Inventors (please provide full names): Senft et al.

SCIENTIFIC REFERENCE
Sci & Tech Inf

JAN 30 k.

Earliest Priority Date: _____

Pat & T M Office

Search Topic:

*Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc., if known.*

**For Sequence Searches Only** *Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.*

A process for reacting an oxygenate (e.g. methanol, ethanol, etc as shown in clain 2) with propylene in a reactor to obtain one of acrolein, acrylic acid, acylonitrile, acetone, isopropanol, Cumene, etc.

Claims 1 – 11 only.

Thanks

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=> FILE REG
FILE 'REGISTRY' ENTERED AT 11:11:35 ON 20 FEB 2007
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DICTIONARY FILE UPDATES:  19 FEB 2007  HIGHEST RN 921921-74-6

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FILE COVERS 1907 - 20 Feb 2007  VOL 146 ISS 9
FILE LAST UPDATED: 19 Feb 2007  (20070219/ED)

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 This file contains CAS Registry Numbers for easy and accurate
 substance identification.

=> D QUE
L2            12 SEA FILE=REGISTRY ABB=ON  (104-76-7/BI OR 107-02-8/BI OR
                 107-13-1/BI OR 11104-44-2/BI OR 115-07-1/BI OR 123-72-8/BI OR
                 67-63-0/BI OR 67-64-1/BI OR 75-56-9/BI OR 78-84-2/BI OR
                 79-10-7/BI OR 98-82-8/BI)
L4             1 SEA FILE=REGISTRY ABB=ON  115-07-1
L5             9 SEA FILE=REGISTRY ABB=ON  L2 AND O/ELS
L6             1 SEA FILE=REGISTRY ABB=ON  107-13-1
L7             1 SEA FILE=REGISTRY ABB=ON  98-82-8
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L8            8 SEA FILE=REGISTRY ABB=ON  L5 NOT BI/ELS
L9           10 SEA FILE=REGISTRY ABB=ON  L6 OR L7 OR L8
L11      243293 SEA FILE=HCAPLUS ABB=ON  L9
L12       30989 SEA FILE=HCAPLUS ABB=ON  L11(L)PREP/RL
L15       17822 SEA FILE=HCAPLUS ABB=ON  L4(L)RACT/RL
L16        5020 SEA FILE=HCAPLUS ABB=ON  L12 AND L15
L21         358 SEA FILE=HCAPLUS ABB=ON  (PROPYLENE OR 1(W)PROPENE)(4A)?STREAM?

L25          30 SEA FILE=HCAPLUS ABB=ON  L15(L)OXYGENA?
L26        4270 SEA FILE=HCAPLUS ABB=ON  L16 AND (CAT/RL OR CATALYST?)
L27           5 SEA FILE=HCAPLUS ABB=ON  L26 AND L25
L28          49 SEA FILE=HCAPLUS ABB=ON  L26 AND L21
L30           4 SEA FILE=HCAPLUS ABB=ON  L28 AND OXYGENA?
L31          53 SEA FILE=HCAPLUS ABB=ON  L27 OR L28 OR L30
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=> D L31 BIB ABS IND HITSTR 1-53

L31 ANSWER 1 OF 53 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2005:1231176 HCAPLUS
DN 143:479711
TI Hydration and etherification process for processing propylene-containing hydrocarbon mixtures into isopropanol and diisopropyl ether
IN Pavlov, O. S.; Pavlov, D. S.
PA Obshchestvo Ogranichennoi Otvetstvennost'yu "Nauchno-Tekhnologicheskii Tsentr Khimicheskim Tekhnologiyam", Russia
SO Russ., 19 pp.
CODEN: RUXXE7
DT Patent
LA Russian
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | RU 2264379 | C1 | 20051120 | RU 2004-122057 | 20040721 |
| PRAI | RU 2004-122057 | | 20040721 | | |

AB A method for processing propylene-containing hydrocarbon mixts. into iso-Pr alc. and/or diisopropyl ether or their mixts. comprises: (i) a liquid-phase hydration of propylene in one or several reaction zones at elevated temps. in the presence of a strong-acid **catalyst** and solvent [e.g., primary alkyl alc.(s)] under reduced pressure in the reaction zone(s); (ii) subsequent rectification-mediated isolation of the desired product(s) from the reaction mixture; and (iii) recycling the solvent to the reaction zone(s) inlet. Concentration of the alc.(s) in the solvent is maintained high enough to dissolve all or most of the water fed into the hydration process in a common liquid **stream** of solvent and **propylene** -containing mixture at a temperature existing in the reaction zone(s) inlet; process flow diagrams are presented.
IC ICM C07C043-04
ICS C07C041-06; C07C002-28
CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
Section cross-reference(s): 23, 48
ST propylene hydration isopropanol manuf; propene hydration isopropanol manuf; diisopropyl ether manuf propylene hydration etherification
IT Alcohols, processes
RL: EPR (Engineering process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(aliphatic, solvents; hydration and etherification process for processing propylene-containing hydrocarbon mixts. into isopropanol and diisopropyl ether)

IT Etherification
Hydration, chemical
(hydration and etherification process for processing propylene-containing hydrocarbon mixts. into isopropanol and diisopropyl ether)

IT Etherification **catalysts**
Hydration **catalysts**
(strong acids; hydration and etherification process for processing propylene-containing hydrocarbon mixts. into isopropanol and diisopropyl ether)

IT Acids, processes
RL: **CAT (Catalyst use)**; EPR (Engineering process); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(strong, **catalysts**; hydration and etherification process for processing propylene-containing hydrocarbon mixts. into isopropanol and diisopropyl ether)

IT 7732-18-5P, Water, preparation
RL: BYP (Byproduct); EPR (Engineering process); PEP (Physical, engineering or chemical process); RCT (Reactant); PREP (Preparation); PROC (Process); RACT (Reactant or reagent)
(hydration and etherification process for processing propylene-containing hydrocarbon mixts. into isopropanol and diisopropyl ether)

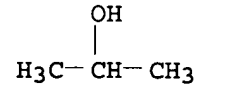
IT 108-20-3P, Diisopropyl ether
RL: EPR (Engineering process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process)
(hydration and etherification process for processing propylene-containing hydrocarbon mixts. into isopropanol and diisopropyl ether)

IT **67-63-0P**, Isopropanol, preparation
RL: EPR (Engineering process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); RCT (Reactant); **PREP (Preparation)**; PROC (Process); RACT (Reactant or reagent)
(hydration and etherification process for processing propylene-containing hydrocarbon mixts. into isopropanol and diisopropyl ether)

IT **115-07-1**, Propylene, reactions
RL: EPR (Engineering process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); **RACT (Reactant or reagent)**
(hydration and etherification process for processing propylene-containing hydrocarbon mixts. into isopropanol and diisopropyl ether)

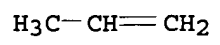
IT **67-63-0P**, Isopropanol, preparation
RL: EPR (Engineering process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); RCT (Reactant); **PREP (Preparation)**; PROC (Process); RACT (Reactant or reagent)
(hydration and etherification process for processing propylene-containing hydrocarbon mixts. into isopropanol and diisopropyl ether)

RN 67-63-0 HCAPLUS
CN 2-Propanol (9CI) (CA INDEX NAME)



IT **115-07-1**, Propylene, reactions
RL: EPR (Engineering process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); **RACT (Reactant or reagent)**
(hydration and etherification process for processing propylene-containing hydrocarbon mixts. into isopropanol and diisopropyl ether)

RN 115-07-1 HCAPLUS
CN 1-Propene (9CI) (CA INDEX NAME)



L31 ANSWER 2 OF 53 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2005:1026643 HCAPLUS
DN 143:326767
TI Converting propylene in an **oxygenate**-contaminated **propylene stream** to non-polymerization derivative products
IN Shutt, John Richard; Brinen, Jeffrey L.
PA Belg.
SO U.S. Pat. Appl. Publ., 22 pp.
CODEN: USXXCO
DT Patent
LA English
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI US 2005209469 | A1 | 20050922 | US 2004-805983 | 20040322 |
| WO 2005095547 | A1 | 20051013 | WO 2005-EP946 | 20050128 |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW | | | | |
| RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | | |
| WO 2005095315 | A2 | 20051013 | WO 2005-EP948 | 20050128 |
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| EP 1733003 | A1 | 20061220 | EP 2005-707100 | 20050128 |
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| EP 1732871 | A2 | 20061220 | EP 2005-715233 | 20050128 |
| R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LI, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, AL, BA, HR, LV, MK, YU | | | | |
| WO 2005093010 | A2 | 20051006 | WO 2005-US8334 | 20050314 |
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NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM,
SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM,
AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK,
EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT,
RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML,
MR, NE, SN, TD, TG

PRAI US 2004-805983 A 20040322
WO 2005-EP946 W 20050128
WO 2005-EP948 W 20050128

AB The invention provides for directing an **oxygenate**-contaminated **propylene**-containing **stream** derived from an **oxygenate** to olefin reaction system to a derivative non-polymerization reactor for conversion of the propylene to one or more derivative non-polymerization products. Exemplary derivative non-polymerization propylene conversion processes include: oxidation to form acrolein, oxidation to form acrylic acid, ammoxidn. to form acrylonitrile, liquid phase oxidation to form acetone, liquid phase hydration to form isopropanol, hydroformylation to form n-butyraldehyde and its subsequent aldol/hydrogenation to form 2-ethylhexanol, direct or indirect oxidation to form propylene oxide, alkylation to form cumene in the presence of phosphoric acid/Kieselguhr or a zeolite and the subsequent selective hydroperoxidn. of cumene to form acetone and phenol.

IC ICM C07D301-03
ICS C07C051-16; C07C047-546

INCL 549523000; 558319000; 562545000; 568476000; 568440000

CC 35-2 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 45, 51

ST propylene **oxygenate** conversion olefin molybdenum bismuth oxide **catalyst**

IT Petroleum refining **catalysts**
(conversion; converting propylene in an **oxygenate** -contaminated **propylene stream** to non-polymerization derivative products over complex oxide **catalyst**)

IT Alkenes, preparation
RL: EPR (Engineering process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process)
(converting propylene in an **oxygenate**-contaminated **propylene stream** to non-polymerization derivative products over complex oxide **catalyst**)

IT Alcohols, reactions
RL: EPR (Engineering process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(converting propylene in an **oxygenate**-contaminated **propylene stream** to non-polymerization derivative products over complex oxide **catalyst**)

IT Monomers
RL: IMF (Industrial manufacture); PREP (Preparation)
(converting propylene in an **oxygenate**-contaminated **propylene stream** to non-polymerization derivative products over complex oxide **catalyst**)

IT Solvents
(organic; converting propylene in an **oxygenate**-contaminated **propylene stream** to non-polymerization derivative products over complex oxide **catalyst**)

IT Hydrocarbons, reactions
RL: EPR (Engineering process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)

(oxy; converting propylene in an **oxygenate**-contaminated **propylene stream** to non-polymerization derivative products over complex oxide **catalyst**)

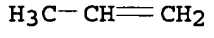
IT 11104-44-2, Bismuth molybdenum oxide
RL: **CAT (Catalyst use)**; USES (Uses)
(converting propylene in an **oxygenate**-contaminated **propylene stream** to non-polymerization derivative products over complex oxide **catalyst**)

IT **115-07-1**, Propylene, reactions
RL: EPR (Engineering process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); **RACT (Reactant or reagent)**
(converting propylene in an **oxygenate**-contaminated **propylene stream** to non-polymerization derivative products over complex oxide **catalyst**)

IT **67-63-0P**, Isopropanol, preparation **67-64-1P**, Acetone, preparation **75-56-9P**, Propylene oxide, preparation **78-84-2P**, Iso-butyraldehyde **79-10-7P**, Acrylic acid, preparation **98-82-8P**, Cumene **104-76-7P**, 2-Ethylhexanol **107-02-8P**, Acrolein, preparation **107-13-1P**, Acrylonitrile, preparation **123-72-8P**, n-Butyraldehyde
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(converting propylene in an **oxygenate**-contaminated **propylene stream** to non-polymerization derivative products over complex oxide **catalyst**)

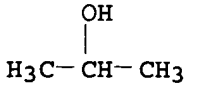
IT **115-07-1**, Propylene, reactions
RL: EPR (Engineering process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); **RACT (Reactant or reagent)**
(converting propylene in an **oxygenate**-contaminated **propylene stream** to non-polymerization derivative products over complex oxide **catalyst**)

RN 115-07-1 HCAPLUS
CN 1-Propene (9CI) (CA INDEX NAME)

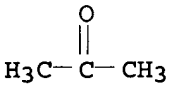


IT **67-63-0P**, Isopropanol, preparation **67-64-1P**, Acetone, preparation **75-56-9P**, Propylene oxide, preparation **78-84-2P**, Iso-butyraldehyde **79-10-7P**, Acrylic acid, preparation **98-82-8P**, Cumene **104-76-7P**, 2-Ethylhexanol **107-02-8P**, Acrolein, preparation **107-13-1P**, Acrylonitrile, preparation **123-72-8P**, n-Butyraldehyde
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(converting propylene in an **oxygenate**-contaminated **propylene stream** to non-polymerization derivative products over complex oxide **catalyst**)

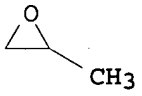
RN 67-63-0 HCAPLUS
CN 2-Propanol (9CI) (CA INDEX NAME)



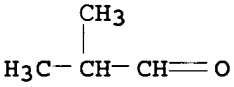
RN 67-64-1 HCAPLUS
CN 2-Propanone (CA INDEX NAME)



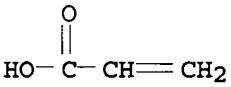
RN 75-56-9 HCAPLUS
CN Oxirane, 2-methyl- (CA INDEX NAME)



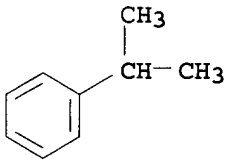
RN 78-84-2 HCAPLUS
CN Propanal, 2-methyl- (9CI) (CA INDEX NAME)



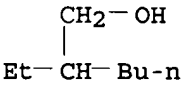
RN 79-10-7 HCAPLUS
CN 2-Propenoic acid (9CI) (CA INDEX NAME)



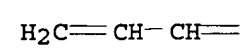
RN 98-82-8 HCAPLUS
CN Benzene, (1-methylethyl)- (9CI) (CA INDEX NAME)



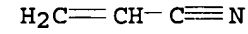
RN 104-76-7 HCAPLUS
CN 1-Hexanol, 2-ethyl- (8CI, 9CI) (CA INDEX NAME)



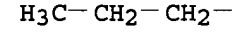
RN 107-02-8 HCAPLUS
CN 2-Propenal (9CI) (CA INDEX NAME)



RN 107-13-1 HCAPLUS
CN 2-Propenenitrile (9CI) (CA INDEX NAME)



RN 123-72-8 HCAPLUS
CN Butanal (9CI) (CA INDEX NAME)



L31 ANSWER 3 OF 53 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2005:692275 HCAPLUS
DN 143:193725
TI Preparation of nitriles by ammoxidation of organic compounds using metal **catalysts**
IN Miyaki, Kenichi; Watanabe, Seigo; Yamaguchi, Masanori; Watanabe, Hirokazu
PA Dia-Nitrix Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 11 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI JP 2005206472 | A | 20050804 | JP 2004-11876 | 20040120 |
| PRAI JP 2004-11876 | | 20040120 | | |

OS CASREACT 143:193725
AB Nitriles are prepared by ammoxidn. of organic compds. in the presence of **catalysts** containing (1) Mo, (2) Bi, (3) Fe, and (4) ≥1 selected from Ni, Co, Zn, Mg, Mn, and Cu while adding Mo-containing powders in which rate of 45-600 μm-diameter particles is ≥85%. Thus, a gaseous mixture of **propylene**, NH3, air, and **steam** was passed through a column packed with Mo10Bi0.6Fe1.3Ni5.5Co0.5Mn0.1Ce0.3Nd0.2K0.2Li0.05Cr0.7P0.2O0.05W0.1Te0.05Ox.(SiO2)40 (preparation given) while adding MoO3 (rate of 45-600 μm-diameter particles 98%) at 440° and 200 kPa to give 83.0% acrylonitrile after 50 h and 82.5% acrylonitrile after 1000 h.
IC ICM C07C253-24
ICS B01J023-94; B01J027-28; B01J027-30; B01J038-00; C07C255-08; C07B061-00
CC 23-19 (Aliphatic Compounds)
ST molybdenum bismuth iron nickel **catalyst** org compd ammoxidn; propylene catalytic ammoxidn acrylonitrile molybdenum trioxide particle size control; nitrile prepn molybdenum trioxide particle size control
IT Ammoxidation **catalysts**
(preparation of nitriles by ammoxidn. of organic compds. using metal **catalysts** containing Mo, Bi, Fe, and Ni, etc., while adding size-controlled powders of Mo compds.)
IT Nitriles, preparation
RL: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP (Preparation)

(preparation of nitriles by ammoxidn. of organic compds. using metal **catalysts** containing Mo, Bi, Fe, and Ni, etc., while adding size-controlled powders of Mo compds.)

IT 1313-27-5, Molybdenum trioxide, uses 7439-98-7D, Molybdenum, compds. 12027-67-7, Ammonium paramolybdate
RL: **CAT (Catalyst use)**; USES (Uses)
(preparation of nitriles by ammoxidn. of organic compds. using metal **catalysts** containing Mo, Bi, Fe, and Ni, etc., while adding size-controlled powders of Mo compds.)

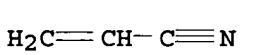
IT 861841-05-6P 861841-06-7P 861841-08-9P
RL: **CAT (Catalyst use)**; PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
(preparation of nitriles by ammoxidn. of organic compds. using metal **catalysts** containing Mo, Bi, Fe, and Ni, etc., while adding size-controlled powders of Mo compds.)

IT **107-13-1P**, Acrylonitrile, preparation
RL: IMF (Industrial manufacture); SPN (Synthetic preparation); **PREP (Preparation)**
(preparation of nitriles by ammoxidn. of organic compds. using metal **catalysts** containing Mo, Bi, Fe, and Ni, etc., while adding size-controlled powders of Mo compds.)

IT **115-07-1**, Propylene, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(preparation of nitriles by ammoxidn. of organic compds. using metal **catalysts** containing Mo, Bi, Fe, and Ni, etc., while adding size-controlled powders of Mo compds.)

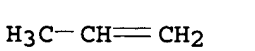
IT **107-13-1P**, Acrylonitrile, preparation
RL: IMF (Industrial manufacture); SPN (Synthetic preparation); **PREP (Preparation)**
(preparation of nitriles by ammoxidn. of organic compds. using metal **catalysts** containing Mo, Bi, Fe, and Ni, etc., while adding size-controlled powders of Mo compds.)

RN 107-13-1 HCAPLUS
CN 2-Propenenitrile (9CI) (CA INDEX NAME)



IT **115-07-1**, Propylene, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(preparation of nitriles by ammoxidn. of organic compds. using metal **catalysts** containing Mo, Bi, Fe, and Ni, etc., while adding size-controlled powders of Mo compds.)

RN 115-07-1 HCAPLUS
CN 1-Propene (9CI) (CA INDEX NAME)



L31 ANSWER 4 OF 53 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2005:409279 HCAPLUS
DN 142:447530
TI Metalloaluminophosphate zeolite **catalyst** pretreatment with C2-4 aldehydes in an oxygenate-into-olefins reaction system
IN Xu, Teng; Coute, Nicolas P.; Clem, Kenneth Ray; Van Egmond, Cornelis F.
PA Exxonmobil Chemical Patents Inc., USA
SO U.S. Pat. Appl. Publ., 18 pp.

CODEN: USXXCO
DT Patent
LA English
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI US 2005101817 | A1 | 20050512 | US 2003-712953 | 20031112 |
| US 7132581 | B2 | 20061107 | | |
| WO 2005056476 | A1 | 20050623 | WO 2004-US19339 | 20040617 |

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRAI US 2003-712953 A 20031112

AB A processes is described for converting oxygenates (e.g., methanol) into olefins (e.g., ethylene and propylene) which includes pretreating the metalloaluminophosphate **catalyst** (e.g., SAPO-34 zeolites) used in the conversion reaction with an aldehyde (e.g., acetaldehyde) . A fresh or regenerated metalloaluminophosphate zeolite **catalyst**, which is low in carbon content, is pretreated with an aldehyde. The aldehyde forms a hydrocarbon cocatalyst within the pore structure of the zeolite, and the pretreated zeolite containing the co-**catalyst** is used to convert the oxygenates into an olefinic product. Process flow diagrams are presented.

IC ICM C07C001-00
INCL 585639000
CC 35-2 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 23, 48, 67
ST alkene manuf catalytic oxygenate conversion; ethylene propylene manuf catalytic oxygenate conversion pretreatment
IT Alcohols, reactions
RL: EPR (Engineering process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(C1; metalloaluminophosphate zeolite **catalyst** pretreatment with aldehydes in an oxygenate-into-olefins reaction system)
IT Aldehydes, preparation
RL: **CAT (Catalyst use)**; EPR (Engineering process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process); USES (Uses)
(C2-4, catalytic reaction products with metalloaluminophosphate zeolites; metalloaluminophosphate zeolite **catalyst** pretreatment with aldehydes in an oxygenate-into-olefins reaction system)
IT Polymerization
(addition; of alkenes)
IT Polymerization **catalysts**
(for the conversion of alkenes into polyolefins)
IT Polyolefins
RL: EPR (Engineering process); PEP (Physical, engineering or chemical process); PNU (Preparation, unclassified); PREP (Preparation); PROC (Process)
(manufacture of)
IT **Catalysts**

(metalloaluminophosphate zeolite **catalyst** pretreatment with C2-4 aldehydes in an oxygenate-into-olefins reaction system)

IT Molecular sieves
(metalloaluminophosphate, reaction products with C2-4 aldehydes; metalloaluminophosphate zeolite **catalyst** pretreatment with C2-4 aldehydes in an oxygenate-into-olefins reaction system)

IT Zeolites (synthetic), uses
RL: **CAT (Catalyst use)**; EPR (Engineering process); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(metalloaluminophosphate, reaction products with C2-4 aldehydes; metalloaluminophosphate zeolite **catalyst** pretreatment with C2-4 aldehydes in an oxygenate-into-olefins reaction system)

IT Hydrocarbons, reactions
RL: EPR (Engineering process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(oxy; metalloaluminophosphate zeolite **catalyst** pretreatment with C2-4 aldehydes in an oxygenate-into-olefins reaction system)

IT Silicoaluminophosphate zeolites
RL: **CAT (Catalyst use)**; EPR (Engineering process); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(reaction products with C2-4 aldehydes; metalloaluminophosphate zeolite **catalyst** pretreatment with C2-4 aldehydes in an oxygenate-into-olefins reaction system)

IT 106-98-9DP, 1-Butene, catalytic reaction products with zeolites
RL: **CAT (Catalyst use)**; EPR (Engineering process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process); USES (Uses)
(metalloaluminophosphate zeolite **catalyst** pretreatment in an oxygenate-into-olefins reaction system)

IT 75-07-0DP, Acetaldehyde, catalytic reaction products with zeolites
123-38-6DP, Propional, catalytic reaction products with zeolites
RL: **CAT (Catalyst use)**; EPR (Engineering process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process); USES (Uses)
(metalloaluminophosphate zeolite **catalyst** pretreatment with C2-4 aldehydes in an oxygenate-into-olefins reaction system)

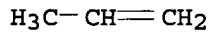
IT 74-85-1P, Ethene, preparation **115-07-1P**, Propene, preparation
RL: EPR (Engineering process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); RCT (Reactant); PREP (Preparation); PROC (Process); **RACT (Reactant or reagent)**
(metalloaluminophosphate zeolite **catalyst** pretreatment with C2-4 aldehydes in an **oxygenate**-into-olefins reaction system)

IT 67-56-1, Methanol, reactions
RL: EPR (Engineering process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(metalloaluminophosphate zeolite **catalyst** pretreatment with C2-4 aldehydes in an oxygenate-into-olefins reaction system)

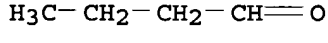
IT **123-72-8DP**, Butyraldehyde, catalytic reaction products with zeolites
RL: **CAT (Catalyst use)**; EPR (Engineering process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); **PREP (Preparation)**; PROC (Process); USES (Uses)
(metalloaluminophosphate zeolite **catalyst** pretreatment with aldehydes in an oxygenate-into-olefins reaction system)

IT 409-21-2, Silicon carbide, uses
RL: **CAT (Catalyst use)**; EPR (Engineering process); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(support; metalloaluminophosphate zeolite **catalyst** pretreatment with C2-4 aldehydes in an oxygenate-into-olefins reaction system)

IT **115-07-1P**, Propene, preparation
RL: EPR (Engineering process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); RCT (Reactant); PREP (Preparation); PROC (Process); **RACT (Reactant or reagent)**
(metalloaluminophosphate zeolite **catalyst** pretreatment with C2-4 aldehydes in an **oxygenate**-into-olefins reaction system)
RN 115-07-1 HCAPLUS
CN 1-Propene (9CI) (CA INDEX NAME)



IT **123-72-8DP**, Butyraldehyde, catalytic reaction products with zeolites
RL: **CAT (Catalyst use)**; EPR (Engineering process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); **PREP (Preparation)**; PROC (Process); USES (Uses)
(metalloaluminophosphate zeolite **catalyst** pretreatment with aldehydes in an oxygenate-into-olefins reaction system)
RN 123-72-8 HCAPLUS
CN Butanal (9CI) (CA INDEX NAME)



RE.CNT 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L31 ANSWER 5 OF 53 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2005:322791 HCAPLUS
DN 142:355726
TI Manufacture of propylene oxide using cumene
IN Suzuki, Akio; Akutsu, Kazumasa
PA Sumitomo Chemical Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | JP 2005097208 | A | 20050414 | JP 2003-335328 | 20030926 |
| PRAI | JP 2003-335328 | | 20030926 | | |

AB Propylene oxide is manufactured by (1) oxidation of cumene into cumene hydroperoxide, (2) epoxidn. of excess propylene by the hydroperoxide to give propylene oxide and cumyl alc., (3) recovering unreacted **propylene** from outlet **stream** and recycling, (4) separating **propylene** oxide from cumyl alc., (5) removing formaldehyde from process streams, and (6) hydrogenation of cumyl alc. into cumene in the presence of solid **catalysts** and recycling to the process 1. Propylene oxide is efficiently manufactured with repeated use of cumene while removing formaldehyde.
IC ICM C07D301-19
ICS C07D303-04
CC 35-2 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 27, 45
ST propylene oxide manuf cumene formaldehyde removal; epoxidn propylene cumene hydroperoxide recycling

IT 98-83-9P, α-Methylstyrene, preparation
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(cumene precursor; manufacture of propylene oxide by epoxidn. of propylene using cumene while removing formaldehyde)

IT 536-60-7P, Cumyl alcohol
RL: BYP (Byproduct); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(manufacture of propylene oxide by epoxidn. of propylene using cumene while removing formaldehyde)

IT **75-56-9P**, Propylene oxide, preparation
RL: IMF (Industrial manufacture); PUR (Purification or recovery); **PREP (Preparation)**
(manufacture of propylene oxide by epoxidn. of propylene using cumene while removing formaldehyde)

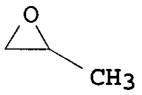
IT 80-15-9P, Cumene hydroperoxide **98-82-8P**, Cumene
RL: IMF (Industrial manufacture); RCT (Reactant); **PREP (Preparation)**; RACT (Reactant or reagent)
(manufacture of propylene oxide by epoxidn. of propylene using cumene while removing formaldehyde)

IT **115-07-1**, Propylene, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(manufacture of propylene oxide by epoxidn. of propylene using cumene while removing formaldehyde)

IT 50-00-0, Formaldehyde, processes
RL: REM (Removal or disposal); PROC (Process)
(manufacture of propylene oxide by epoxidn. of propylene using cumene while removing formaldehyde)

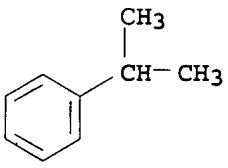
IT **75-56-9P**, Propylene oxide, preparation
RL: IMF (Industrial manufacture); PUR (Purification or recovery); **PREP (Preparation)**
(manufacture of propylene oxide by epoxidn. of propylene using cumene while removing formaldehyde)

RN 75-56-9 HCAPLUS
CN Oxirane, 2-methyl- (CA INDEX NAME)



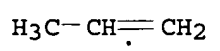
IT **98-82-8P**, Cumene
RL: IMF (Industrial manufacture); RCT (Reactant); **PREP (Preparation)**; RACT (Reactant or reagent)
(manufacture of propylene oxide by epoxidn. of propylene using cumene while removing formaldehyde)

RN 98-82-8 HCAPLUS
CN Benzene, (1-methylethyl)- (9CI) (CA INDEX NAME)



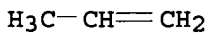
IT **115-07-1**, Propylene, reactions

RL: RCT (Reactant); **RACT (Reactant or reagent)**
(manufacture of propylene oxide by epoxidn. of propylene using cumene while removing formaldehyde)
RN 115-07-1 HCAPLUS
CN 1-Propene (9CI) (CA INDEX NAME)

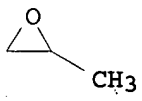


L31 ANSWER 6 OF 53 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2005:80032 HCAPLUS
DN 142:482343
TI Study on Fe-Al-P-O **catalyst** for propylene epoxidation to propylene oxide
AU Zhong, Shun-he; Zhong, Liang; Sun, Fei-fei; Xiao, Xiu-fen
CS College of Chemical Engineering and Technology, Tianjin University, Tianjin, 300072, Peop. Rep. China
SO Ranliao Huaxue Xuebao (2004), 32(6), 740-744
CODEN: RHXUD8; ISSN: 0253-2409
PB Kexue Chubanshe
DT Journal
LA Chinese
AB Fe-Al-P-O **catalysts** were prepared by sol-gel method. The phys. and chemical characters and reactivity of the **catalysts** were studied by using techniques of IR, x-ray diffraction, TEM, BET, TPR and micro-reactor. The exptl. results revealed that Fe1/2Al1/2PO4 **catalyst** is a uniform compound of 10 nm particles FePO4 and AlPO4, in which FePO4 is highly-dispersed by AlPO4 and the activity of the lattice oxygen is higher than that in the single FePO4. The reactivity of Fe1/2Al1/2PO4 **catalyst** is obviously related with the feed composition In case of propylene and oxygen only as the feed, the outcome is mainly acrolein. Addition of H2 into the feed **stream** leads to **propylene** oxide with some acrolein. Addition of H2O into the feed stream consisted of C3H6, H2 and O2, can effectively restrict the formation of byproduct acrolein and increase the selectivity to propylene oxide. At a condition of 0.1 MPa, 200°, C3H6/O2/H2/H2O/N2(mol) = 1:1:1:1:6 and space velocity of 1 200 h-1, the propylene conversion of 8.9% and the propylene oxide selectivity of 81.0% can be obtained.
CC 35-2 (Chemistry of Synthetic High Polymers)
ST propylene epoxidn propylene oxide synthesis iron aluminum **catalyst**
IT Epoxidation
(of propylene for synthesis of propylene oxide using Fe-Al-P-O **catalyst**)
IT Epoxidation **catalysts**
Sol-gel processing
(preparation of Fe-Al-P-O **catalyst** for synthesis of propylene oxide by propylene epoxidn.)
IT 7784-30-7P, Aluminum phosphate 10045-86-0P, Iron phosphate 159093-11-5P, Aluminum iron phosphate (Al0.5Fe0.5(PO4))
RL: **CAT (Catalyst use)**; SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(preparation of Fe-Al-P-O **catalyst** for synthesis of propylene oxide by propylene epoxidn.)
IT 7429-90-5, Aluminum, reactions 7439-89-6, Iron, reactions 7722-76-1, Ammonium phosphate ((NH4)H2PO4) 7784-27-2, Aluminum nitrate nonahydrate
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of Fe-Al-P-O **catalyst** for synthesis of propylene oxide by propylene epoxidn.)

IT **115-07-1**, Propylene, reactions 7722-84-1, Hydrogen peroxide, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(synthesis of propylene oxide by propylene epoxidn. using Fe-Al-P-O **catalyst**)
IT **75-56-9P**, Propylene oxide, preparation
RL: SPN (Synthetic preparation); **PREP (Preparation)**
(synthesis of propylene oxide by propylene epoxidn. using Fe-Al-P-O **catalyst**)
IT **115-07-1**, Propylene, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(synthesis of propylene oxide by propylene epoxidn. using Fe-Al-P-O **catalyst**)
RN 115-07-1 HCAPLUS
CN 1-Propene (9CI) (CA INDEX NAME)



IT **75-56-9P**, Propylene oxide, preparation
RL: SPN (Synthetic preparation); **PREP (Preparation)**
(synthesis of propylene oxide by propylene epoxidn. using Fe-Al-P-O **catalyst**)
RN 75-56-9 HCAPLUS
CN Oxirane, 2-methyl- (CA INDEX NAME)



L31 ANSWER 7 OF 53 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2004:934380 HCAPLUS
DN 141:380287
TI Process for converting a hydrocarbon into an oxygenate or a nitrile
IN Brophy, John H.; Pesa, Frederick A.; Tonkovich, Anna Lee; McDaniel, Jeffrey S.; Jarosch, Kai Tod Paul
PA UK
SO U.S. Pat. Appl. Publ., 24 pp.
CODEN: USXXCO
DT Patent
LA English
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI US 2004220434 | A1 | 20041104 | US 2003-429286 | 20030502 |
| CA 2523704 | A1 | 20041118 | CA 2004-2523704 | 20040427 |
| WO 2004099113 | A1 | 20041118 | WO 2004-US12870 | 20040427 |

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE,

SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

| | | | | | |
|---|---|---|---|---|---|
| | EP 1626948 | A1 | 20060222 | EP 2004-760584 | 20040427 |
| | R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK | | | | |
| | BR 2004010039 | A | 20060425 | BR 2004-10039 | 20040427 |
| | JP 2006525334 | T | 20061109 | JP 2006-513347 | 20040427 |
| PRAI | US 2003-429286 | A | 20030502 | | |
| | WO 2004-US12870 | W | 20040427 | | |

AB A process for converting a hydrocarbon reactant to a product comprising an oxygenate (e.g., ethylene oxide) or a nitrile comprises: (A) flowing a reactant composition comprising the hydrocarbon reactant, and oxygen or a source of oxygen, and optionally ammonia, through a microchannel reactor in contact with a **catalyst** to convert the hydrocarbon reactant to the product, the hydrocarbon reactant undergoing an exothermic reaction in the microchannel reactor; (B) transferring heat from the microchannel reactor to a heat exchanger during step (A); and (C) quenching the product from step (A).

IC ICM C07C027-00
INCL 568959000
CC 35-2 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 48
ST oxygenate manuf hydrocarbon conversion; nitrile manuf hydrocarbon conversion; ethylene oxide manuf hydrocarbon conversion; oxirane manuf hydrocarbon conversion
IT Aromatic hydrocarbons, reactions
RL: EPR (Engineering process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(alkyl; process for converting a hydrocarbon into an oxygenate or a nitrile)
IT Air
Ammoxidation
Ceramics
Epoxidation
Heat exchangers
Oxidation
(in a process for converting a hydrocarbon into an oxygenate or a nitrile)
IT Alloys, uses
Glass, uses
Glass fibers, uses
RL: DEV (Device component use); EPR (Engineering process); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(in a process for converting a hydrocarbon into an oxygenate or a nitrile)
IT Reactors
(microchannel; in a process for converting a hydrocarbon into an oxygenate or a nitrile)
IT Alcohols, preparation
Aldehydes, preparation
Epoxides
Nitriles, preparation
RL: EPR (Engineering process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process)
(process for converting a hydrocarbon into an oxygenate or a nitrile)
IT Alkadienes
RL: EPR (Engineering process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(process for converting a hydrocarbon into an oxygenate or a nitrile)

IT Alkanes, reactions
RL: EPR (Engineering process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(process for converting a hydrocarbon into an oxygenate or a nitrile)

IT Alkenes, reactions
RL: EPR (Engineering process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(process for converting a hydrocarbon into an oxygenate or a nitrile)

IT Hydrocarbons, reactions
RL: EPR (Engineering process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(process for converting a hydrocarbon into an oxygenate or a nitrile)

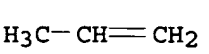
IT 7429-90-5, Aluminum, uses 7440-02-0, Nickel, uses 7440-32-6, Titanium, uses 7440-50-8, Copper, uses 11105-19-4, Monel 12597-69-2, Steel, uses 12597-71-6, Brass, uses 12606-02-9, Inconel 14808-60-7, Quartz, uses
RL: DEV (Device component use); EPR (Engineering process); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(in a process for converting a hydrocarbon into an oxygenate or a nitrile)

IT 71-43-2, Benzene, reactions 74-85-1, Ethene, reactions 100-42-5, Styrene, reactions 106-98-9, 1-Butene, reactions 106-99-0, Butadiene, reactions 108-88-3, Methylbenzene, reactions **115-07-1**, Propene, reactions 463-49-0, Allene 1330-20-7, Dimethylbenzene, reactions 7664-41-7, Ammonia, reactions 7782-44-7, Oxygen, reactions
RL: EPR (Engineering process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); **RACT (Reactant or reagent)**
(in a process for converting a hydrocarbon into an **oxygenate** or a nitrile)

IT 50-00-0P, Formaldehyde, preparation 64-17-5P, Ethanol, preparation 67-56-1P, Methanol, preparation 75-07-0P, Acetaldehyde, preparation 75-21-8P, Oxirane, preparation **75-56-9P**, Methyloxirane, preparation 107-18-6P, Allyl alcohol, preparation
RL: EPR (Engineering process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); **PREP (Preparation)**; PROC (Process)
(process for converting a hydrocarbon into an oxygenate or a nitrile)

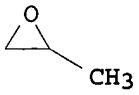
IT **115-07-1**, Propene, reactions
RL: EPR (Engineering process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); **RACT (Reactant or reagent)**
(in a process for converting a hydrocarbon into an **oxygenate** or a nitrile)

RN 115-07-1 HCAPLUS
CN 1-Propene (9CI) (CA INDEX NAME)



IT **75-56-9P**, Methyloxirane, preparation
RL: EPR (Engineering process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); **PREP (Preparation)**; PROC (Process)
(process for converting a hydrocarbon into an oxygenate or a nitrile)

RN 75-56-9 HCAPLUS
CN Oxirane, 2-methyl- (CA INDEX NAME)

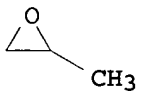


L31 ANSWER 8 OF 53 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2004:203821 HCAPLUS
DN 140:236204
TI An integrated method for production of propylene oxide
IN Bender, Michael; Zehner, Peter; Machhammer, Otto; Mueller, Ulrich; Harth, Klaus; Schindler, Goetz-Peter; Junicke, Henrik
PA BASF Aktiengesellschaft, Germany
SO PCT Int. Appl., 35 pp.
CODEN: PIXXD2
DT Patent
LA German
FAN.CNT 1

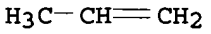
| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI WO 2004020423 | A1 | 20040311 | WO 2003-EP9616 | 20030829 |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW | | | | |
| RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | | |
| DE 10240129 | A1 | 20040519 | DE 2002-10240129 | 20020830 |
| DE 10240129 | B4 | 20041111 | | |
| CA 2496954 | A1 | 20040311 | CA 2003-2496954 | 20030829 |
| AU 2003266329 | A1 | 20040319 | AU 2003-266329 | 20030829 |
| EP 1537092 | A1 | 20050608 | EP 2003-790944 | 20030829 |
| EP 1537092 | B1 | 20060607 | | |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK | | | | |
| CN 1688560 | A | 20051026 | CN 2003-824612 | 20030829 |
| AT 328876 | T | 20060615 | AT 2003-790944 | 20030829 |
| US 2005245751 | A1 | 20051103 | US 2005-526045 | 20050228 |
| US 7173143 | B2 | 20070206 | | |
| PRAI DE 2002-10240129 | A | 20020830 | | |
| WO 2003-EP9616 | W | 20030829 | | |

AB An integrated method for production of propylene oxide comprises at least the steps of (a) dehydrogenation of propane to obtain a partial stream T(0) containing at least propane, propene and hydrogen, (b) separation of the partial stream T(0) to obtain at least one gaseous partial stream T(2) with high hydrogen content and a partial stream T(1) containing at least propene and propane, (c) synthesis of hydrogen peroxide using the partial stream T(2) to produce a partial stream T(4) with high hydrogen peroxide content and a gaseous partial stream T(6), (d) separation of the partial stream T(1) to obtain at least one partial stream T(5) with high propane content and at least one partial stream T(3) with high propene content, and (e) reaction of the partial stream T(3) with the partial **stream** T(4) to obtain **propylene** oxide. The epoxidn. step (e) can be carried out in the presence of **catalysts.** The propane quality is not critical, pure propane as well as recycled propane containing byproducts

substantially unaffecting dehydrogenation can be used.
IC ICM C07D301-12
CC 35-2 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 27
ST propane dehydrogenation epoxidn propylene oxide prodn
IT Dehydrogenation
Epoxidation
(integrated method for production of propylene oxide)
IT **75-56-9P**, Propylene oxide, preparation
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(integrated method for production of)
IT **115-07-1P**, Propylene, preparation 7722-84-1P, Hydrogen peroxide, preparation
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); **RACT (Reactant or reagent)**
(integrated method for production of propylene oxide)
IT 74-98-6, Propane, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(integrated method for production of propylene oxide)
IT **75-56-9P**, Propylene oxide, preparation
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(integrated method for production of)
RN 75-56-9 HCAPLUS
CN Oxirane, 2-methyl- (CA INDEX NAME)



IT **115-07-1P**, Propylene, preparation
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); **RACT (Reactant or reagent)**
(integrated method for production of propylene oxide)
RN 115-07-1 HCAPLUS
CN 1-Propene (9CI) (CA INDEX NAME)



RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L31 ANSWER 9 OF 53 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2004:20380 HCAPLUS
DN 140:93912
TI Process for the epoxidation of olefins with hydrogen peroxide followed by hydrogenation of the product stream.
IN Haas, Thomas; Thiele, Georg; Moroff, Gerald; Ullrich, Norbert; Hofen, Willi; Stochniol, Guido; Eickhoff, Hubertus; Pohl, Werner; Woll, Wolfgang; Brasse, Claudia; Berges, Jose; Kampeis, Percy
PA Degussa AG, Germany; Uhde GmbH
SO U.S. Pat. Appl. Publ., 8 pp.
CODEN: USXXCO
DT Patent
LA English
FAN.CNT 1
PATENT NO. KIND DATE APPLICATION NO. DATE

| | | | | | |
|---|---|---|---|---|---|
| PI | US 2004006239 | A1 | 20040108 | US 2003-428607 | 20030502 |
| | US 7141683 | B2 | 20061128 | | |
| PRAI | US 2002-376845P | P | 20020502 | | |

OS CASREACT 140:93912

AB Olefins were epoxidized by (1) reacting an olefin with H2O2 in presence of an epoxidn. **catalyst** and an alc. solvent; (2) separating product olefin oxide and unreacted olefin from the reaction product of step 1; (3) recovering a stream comprising the alc. solvent; and (4) subjecting the recovered stream of step 3 to hydrogenation. Hydrogenation of the product stream from propene epoxidn. using Ru/C improved Ti silicalite epoxidn. **catalyst** activity and selectivity and reduced MeCHO and Me formate byproduct after 500 h.

IC ICM C07D301-12

INCL 549531000

CC 27-2 (Heterocyclic Compounds (One Hetero Atom))
Section cross-reference(s): 35

ST olefin epoxidn hydrogen peroxide **catalyst** alc solvent hydrogenation; **propylene** oxide prepn product **stream** hydrogenation

IT Titanium silicalite
RL: **CAT (Catalyst use)**; USES (Uses)
(epoxidn. **catalyst**; process for the epoxidn. of olefins with hydrogen peroxide followed by hydrogenation of the product stream)

IT Epoxidation
Hydrogenation
(process for the epoxidn. of olefins with hydrogen peroxide followed by hydrogenation of the product stream)

IT Epoxides
RL: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP (Preparation)
(process for the epoxidn. of olefins with hydrogen peroxide followed by hydrogenation of the product stream)

IT Alcohols, uses
RL: NUU (Other use, unclassified); USES (Uses)
(process for the epoxidn. of olefins with hydrogen peroxide followed by hydrogenation of the product stream)

IT Alkenes, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(process for the epoxidn. of olefins with hydrogen peroxide followed by hydrogenation of the product stream)

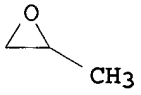
IT Hydrogenation **catalysts**
(ruthenium, rhodium, palladium, platinum, silver, iridium, iron, copper, nickel, cobalt; process for the epoxidn. of olefins with hydrogen peroxide followed by hydrogenation of the product stream)

IT Epoxidation **catalysts**
(titanium silicalite; process for the epoxidn. of olefins with hydrogen peroxide followed by hydrogenation of the product stream)

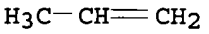
IT 1314-23-4, Zirconium dioxide, uses 1344-28-1, Aluminum oxide, uses 7631-86-9, Silica, uses 13463-67-7, Titanium dioxide, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(**catalyst** support; process for the epoxidn. of olefins with hydrogen peroxide followed by hydrogenation of the product stream)

IT 7439-88-5, Iridium, uses 7439-89-6, Iron, uses 7440-02-0, Nickel, uses 7440-05-3, Palladium, uses 7440-06-4, Platinum, uses 7440-16-6, Rhodium, uses 7440-18-8, Ruthenium, uses 7440-22-4, Silver, uses 7440-48-4, Cobalt, uses 7440-50-8, Copper, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(hydrogenation **catalyst**; process for the epoxidn. of olefins with hydrogen peroxide followed by hydrogenation of the product stream)

IT **75-56-9P**, Propene oxide, preparation
RL: IMF (Industrial manufacture); SPN (Synthetic preparation); **PREP (Preparation)**
(process for the epoxidn. of olefins with hydrogen peroxide followed by hydrogenation of the product stream)
IT 67-56-1, Methanol, uses
RL: NUU (Other use, unclassified); USES (Uses)
(process for the epoxidn. of olefins with hydrogen peroxide followed by hydrogenation of the product stream)
IT **115-07-1**, Propene, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(process for the epoxidn. of olefins with hydrogen peroxide followed by hydrogenation of the product stream)
IT 7722-84-1, Hydrogen peroxide, reactions
RL: RGT (Reagent); RACT (Reactant or reagent)
(process for the epoxidn. of olefins with hydrogen peroxide followed by hydrogenation of the product stream)
IT **75-56-9P**, Propene oxide, preparation
RL: IMF (Industrial manufacture); SPN (Synthetic preparation); **PREP (Preparation)**
(process for the epoxidn. of olefins with hydrogen peroxide followed by hydrogenation of the product stream)
RN 75-56-9 HCAPLUS
CN Oxirane, 2-methyl- (CA INDEX NAME)



IT **115-07-1**, Propene, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(process for the epoxidn. of olefins with hydrogen peroxide followed by hydrogenation of the product stream)
RN 115-07-1 HCAPLUS
CN 1-Propene (9CI) (CA INDEX NAME)



RE.CNT 58 THERE ARE 58 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L31 ANSWER 10 OF 53 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2003:747904 HCAPLUS
DN 139:278233
TI Process for epoxidation of organic compounds with oxygen or oxygen-delivering compounds using **catalysts** containing metal-organic framework (MOF) materials
IN Mueller, Ulrich; Lobree, Lisa; Hesse, Michael; Yaghi, Omar M.; Eddaoudi, Mohamed
PA BASF Aktiengesellschaft, Germany; The Regents of the University of Michigan
SO U.S., 13 pp.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | US 6624318 | B1 | 20030923 | US 2002-157494 | 20020530 |
| | WO 2003101975 | A1 | 20031211 | WO 2003-EP5547 | 20030527 |
| | W: US | | | | |
| | RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR | | | | |
| | EP 1513823 | A1 | 20050316 | EP 2003-730125 | 20030527 |
| | R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, SK | | | | |
| PRAI | US 2002-157494 | A | 20020530 | | |
| | WO 2003-EP5547 | W | 20030527 | | |

OS CASREACT 139:278233

AB The present invention relates to a process for the epoxidn. of ≥1 organic compound with an oxygen-delivering substance, for example a hydroperoxide, in the presence of ≥1 **catalyst** containing a metal-organic framework material comprising pores and a metal ion and ≥1 bidentate organic compound, said bidentate organic compound being coordinately bound to the metal ion. Thus, a 66:24:10 volume ratio of O2, He, and **propylene** was **streamed** through a tube reactor containing AgNO3-treated MOF-5 at 220° to give propylene oxide with a turnover of 3.3% and selectivity of 10.3% ofter 15 h.

IC ICM C07D301-04
ICS C07D301-12; C07D301-19

INCL 549529000; 549523000; 549531000; 549533000; 549534000; 549536000

CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
Section cross-reference(s): 23, 27, 30, 32, 67

ST epoxidn **catalyst** metal propylene propylene oxide; alkene epoxidn **catalyst** metal ion bidentate complex; propylene epoxidn mof5 silver ion oxygen

IT Alcohols, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(aliphatic, ligand; epoxidn. of organic compound with oxygen or oxygen-delivering compds. using **catalysts** containing metal-organic frame-work materials)

IT Phosphonium compounds
RL: **CAT (Catalyst use)**; USES (Uses)
(alkyl, aryl ligand; epoxidn. of organic compound with oxygen or oxygen-delivering compds. using **catalysts** containing metal-organic frame-work materials)

IT Amines, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(aromatic, ligand; epoxidn. of organic compound with oxygen or oxygen-delivering compds. using **catalysts** containing metal-organic frame-work materials)

IT Epoxidation
Epoxidation **catalysts**
Pore size
(epoxidn. of organic compound with oxygen or oxygen-delivering compds. using **catalysts** containing metal-organic frame-work materials)

IT Epoxides
RL: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP (Preparation)
(epoxidn. of organic compound with oxygen or oxygen-delivering compds. using **catalysts** containing metal-organic frame-work materials)

IT Terpenes, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(epoxidn. of organic compound with oxygen or oxygen-delivering compds. using **catalysts** containing metal-organic frame-work materials)

IT Phosphates, uses

RL: **CAT (Catalyst use)**; USES (Uses)
(hydrogen, ligand; epoxidn. of organic compound with oxygen or oxygen-delivering compds. using **catalysts** containing metal-organic frame-work materials)

IT Halogen compounds
RL: **CAT (Catalyst use)**; USES (Uses)
(iodates, ligand; epoxidn. of organic compound with oxygen or oxygen-delivering compds. using **catalysts** containing metal-organic frame-work materials)

IT Amines, uses
Bicarbonates
Bromates
Bromides, uses
Carbonates, uses
Chlorates
Chlorides, uses
Diphosphates
Iodides, uses
Nitrates, uses
Phenols, uses
Phosphates, uses
Phosphites
Sulfates, uses
Sulfites
RL: **CAT (Catalyst use)**; USES (Uses)
(ligand; epoxidn. of organic compound with oxygen or oxygen-delivering compds. using **catalysts** containing metal-organic frame-work materials)

IT Acids, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(organic, ligand; epoxidn. of organic compound with oxygen or oxygen-delivering compds. using **catalysts** containing metal-organic frame-work materials)

IT Polyphosphates
RL: **CAT (Catalyst use)**; USES (Uses)
(triphosphates, ligand; epoxidn. of organic compound with oxygen or oxygen-delivering compds. using **catalysts** containing metal-organic frame-work materials)

IT Steroids, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(unsatd.; epoxidn. of organic compound with oxygen or oxygen-delivering compds. using **catalysts** containing metal-organic frame-work materials)

IT **115-07-1D**, 1-Propene, 3-halo derivs.
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(allyl halides; epoxidn. of organic compound with oxygen or oxygen-delivering compds. using **catalysts** containing metal-organic frame-work materials)

IT 7761-88-8, Silver nitrate, uses 13775-47-8 14127-61-8, Calcium 2+, uses 14175-55-4, Silicon 2+, uses 14280-50-3, Lead 2+, uses 14302-87-5, Mercury +2, uses 14546-48-6, Manganese 3+, uses 14627-67-9, Thallium 3+, uses 14701-21-4, Silver +1, uses 14701-22-5, Nickel +2, uses 14903-34-5, Nickel +1, uses 15121-26-3, Vanadium 2+, uses 15158-11-9, Copper +2, uses 15158-12-0, Lead 4+, uses 15438-31-0, Iron 2+, uses 15543-40-5, Zirconium 4+, uses 15735-13-4, Germanium 2+, uses 16043-45-1, Titanium 4+, uses 16065-83-1, Chromium 3+, uses 16065-84-2, Germanium 4+, uses 16065-88-6, Palladium +2, uses 16130-78-2, Zinc terephthalate 16397-91-4, Manganese 2+, uses 16463-30-2, Bismuth +1, uses 17428-41-0, Arsenic +5, uses 17493-86-6,

Copper +1, uses 20074-52-6, Iron 3+, uses 20561-55-1, Palladium +1, uses 20561-56-2, Platinum +1, uses 20561-59-5, Rhodium 1+, uses 20681-14-5, Gold +1, uses 22537-22-0, Magnesium 2+, uses 22537-23-1, Aluminum 3+, uses 22537-24-2, Silicon 4+, uses 22537-29-7, Scandium 3+, uses 22537-33-3, Gallium 3+, uses 22537-39-9, Strontium 2+, uses 22537-40-2, Yttrium 3+, uses 22537-48-0, Cadmium +2, uses 22537-49-1, Indium 3+, uses 22537-50-4, Tin 4+, uses 22537-51-5, Antimony +5, uses 22541-12-4, Barium 2+, uses 22541-25-9, Hafnium 4+, uses 22541-33-9, Bismuth +5, uses 22541-53-3, Cobalt 2+, uses 22541-54-4, uses 22541-59-9, Ruthenium 2+, uses 22541-60-2, Rhodium 2+, uses 22541-63-5, Cobalt 3+, uses 22541-76-0, Vanadium 4+, uses 22541-77-1, Vanadium 3+, uses 22541-83-9, Niobium 3+, uses 22541-86-2, Molybdenum 3+, uses 22541-88-4, Ruthenium 3+, uses 22541-90-8, Tin 2+, uses 22541-99-7, Tungsten 3+, uses 22542-03-6, Rhenium 2+, uses 22542-06-9, Osmium 3+, uses 22542-07-0, Osmium 2+, uses 22542-09-2, Iridium 2+, uses 22542-10-5, Platinum +2, uses 22679-96-5, Antimony +1, uses 22856-08-2, Arsenic +1, uses 23713-46-4, Bismuth +3, uses 23713-48-6, Antimony +3, uses 23713-49-7, Zinc +2, uses 29010-86-4D, Benzenedicarboxylic acid, ester 35182-18-4, Tantalum 3+, uses 36756-53-3, Rhenium 3+, uses 54923-08-9, Iridium 1+, uses 255367-67-0
RL: **CAT (Catalyst use)**; USES (Uses)
(epoxidn. of organic compound with oxygen or oxygen-delivering compds. using **catalysts** containing metal-organic frame-work materials)

IT **75-56-9P**, Propylene oxide, preparation
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(epoxidn. of organic compound with oxygen or oxygen-delivering compds. using **catalysts** containing metal-organic frame-work materials)

IT 57-10-3, Palmitic acid, reactions 60-33-3, Linoleic acid, reactions 68-26-8, Vitamin a 74-85-1, Ethene, reactions 75-38-7, Vinylidene fluoride 77-73-6, Dicyclopentadiene 78-70-6, Linalool 78-79-5, Isoprene, reactions 79-10-7, Acrylic acid, reactions 79-41-4, Methacrylic acid, reactions 95-13-6, Indene 97-54-1, Isoeugenol 98-83-9, Methylstyrene, reactions 100-40-3, Vinylcyclohexene 100-42-5, Styrene, reactions 104-46-1, Anethole 106-24-1, Geraniol 106-98-9, 1-Butene, reactions 106-99-0, Butadiene, reactions 107-01-7, 2-Butene 107-18-6, Allyl alcohol, reactions 109-92-2, Ethoxyethene 110-16-7, Maleic acid, reactions 110-83-8, Cyclohexene, reactions 112-80-1, Oleic acid, reactions **115-07-1**, Propylene, reactions 115-11-7, Isobutene, reactions 115-95-7, Linalyl acetate 142-29-0, Cyclopentene 498-66-8, Norbornene 504-60-9, Piperylene 513-42-8, Methallyl alcohol 563-47-3, Methallyl chloride 588-59-0, Stilbene 591-97-9, Crotyl chloride 625-38-7, Vinylacetic acid 628-92-2, Cycloheptene 695-12-5, Vinylcyclohexane 930-22-3, Vinyloxirane 931-88-4, Cyclooctene 1321-74-0, Divinylbenzene, reactions 1501-82-2, Cyclododecene 3724-65-0, Crotonic acid 6142-73-0, Methylenecyclopropane 6842-15-5, Tetrapropylene 7235-40-7, β-Carotene 9003-17-2, Polybutadiene 9003-27-4, Polyisobutene 11069-19-5, Dichlorobutene 11098-57-0, Pentenol 12542-32-4, Butenediol 13987-01-4, Tripropylene 25167-70-8, Diisobutene 25264-93-1, Hexene 25339-56-4, Heptene 25377-72-4, Pentene 25377-82-6, Tridecene 25377-83-7, Octene 25378-22-7, Dodecene 25737-30-8, Diphenylbutadiene 26952-13-6, Tetradecene 27070-59-3, Cyclododecatriene 27215-95-8, Nonene 27400-78-8, Eicosene 29965-97-7, Cyclooctadiene 39014-56-7, Tetrahydroindene 40356-67-0, Vinylnorbornene 42296-74-2, Hexadiene 57323-59-8, Butenol 61665-19-8, Trimethylpentene 64391-40-8, 2-Tridecenol 73456-83-4, Octadienol 224802-37-3, Cyclopentenediol
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(epoxidn. of organic compound with oxygen or oxygen-delivering compds. using **catalysts** containing metal-organic frame-work materials)

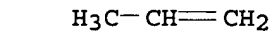
IT 80-15-9, Cumen hydroperoxide 3071-32-7, Ethylbenzene hydroperoxide

7722-84-1, Hydrogen peroxide, reactions 7782-44-7, Oxygen, reactions 10028-15-6, Ozone, reactions 10102-43-9, Nitric oxide, reactions
RL: RGT (Reagent); RACT (Reactant or reagent)
(epoxidn. of organic compound with oxygen or oxygen-delivering compds. using **catalysts** containing metal-organic frame-work materials)

IT 67-64-1, Acetone, uses 71-43-2, Benzene, uses 74-82-8, Methane, uses 75-09-2, Methylene chloride, uses 91-20-3, Naphthalene, uses 98-95-3, Nitrobenzene, uses 107-06-2, 1,2-Dichloroethane, uses 108-88-3, Toluene, uses 108-90-7, Chlorobenzene, uses 109-99-9, Tetrahydrofuran, uses 110-02-1, Thiophene 110-54-3, Hexane, uses 110-86-1, Pyridine, uses 121-44-8, Triethylamine, uses 124-38-9, Carbon dioxide, uses 141-43-5, Ethanolamine, uses 142-45-0D, 2-Butynedioic acid, ester 554-95-0D, 1,3,5-Benzene tricarboxylic acid, ester 1330-20-7, Xylene, uses 1493-13-6, Trifluoromethanesulfonic acid 7664-41-7, Ammonia, uses 14066-20-7, Dihydrogen phosphate, uses 27252-21-7D, Benzenetricarboxylic acid, ester 28604-87-7D, Naphthalenedicarboxylic acid, ester 100884-80-8D, 1,3,5,7-Adamantanetetracarboxylic acid, ester 160517-35-1D, ester 605643-38-7D, ester
RL: **CAT (Catalyst use)**; USES (Uses)
(ligand; epoxidn. of organic compound with oxygen or oxygen-delivering compds. using **catalysts** containing metal-organic frame-work materials)

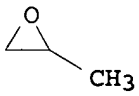
IT **115-07-1D**, 1-Propene, 3-halo derivs.
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(allyl halides; epoxidn. of organic compound with oxygen or oxygen-delivering compds. using **catalysts** containing metal-organic frame-work materials)

RN 115-07-1 HCAPLUS
CN 1-Propene (9CI) (CA INDEX NAME)



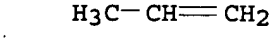
IT **75-56-9P**, Propylene oxide, preparation
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(epoxidn. of organic compound with oxygen or oxygen-delivering compds. using **catalysts** containing metal-organic frame-work materials)

RN 75-56-9 HCAPLUS
CN Oxirane, 2-methyl- (CA INDEX NAME)



IT **115-07-1**, Propylene, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(epoxidn. of organic compound with oxygen or oxygen-delivering compds. using **catalysts** containing metal-organic frame-work materials)

RN 115-07-1 HCAPLUS
CN 1-Propene (9CI) (CA INDEX NAME)



RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L31 ANSWER 11 OF 53 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2002:977710 HCAPLUS
DN 138:39177
TI Process for the recovery of combustible components of a gas stream
IN Hofen, Willi; Thiele, Georg; Woell, Wolfgang
PA Degussa AG, Germany; Uhde Gmbh
SO PCT Int. Appl., 17 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI WO 2002102496 | A1 | 20021227 | WO 2002-EP6448 | 20020610 |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW | | | | |
| RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG | | | | |
| EP 1270062 | A1 | 20030102 | EP 2001-114576 | 20010618 |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR | | | | |
| CA 2450816 | A1 | 20021227 | CA 2002-2450816 | 20020610 |
| EP 1397192 | A1 | 20040317 | EP 2002-748768 | 20020610 |
| EP 1397192 | B1 | 20061004 | | |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR | | | | |
| BR 2002010454 | A | 20040817 | BR 2002-10454 | 20020610 |
| CN 1524009 | A | 20040825 | CN 2002-812201 | 20020610 |
| JP 2004535920 | T | 20041202 | JP 2003-505074 | 20020610 |
| AT 341386 | T | 20061015 | AT 2002-748768 | 20020610 |
| IN 2003KN01593 | A | 20060317 | IN 2003-KN1593 | 20031209 |
| ZA 2003009761 | A | 20040928 | ZA 2003-9761 | 20031217 |
| PRAI EP 2001-114576 | A | 20010618 | | |
| WO 2002-EP6448 | W | 20020610 | | |

OS CASREACT 138:39177
AB The process for the recovery and recycling of combustible components of a gas stream comprising the combustible components and oxygen by selective absorption of the combustible components in a solvent, whereby during the absorption the gas phase is dispersed in a continuous liquid phase of the solvent. In the epoxidn. of propene with hydrogen peroxide in an alc. solvent in presence of a **catalyst**, wherein a gas stream comprising unreacted propene, propene oxide and oxygen from the decomposition of the hydrogen peroxide is separated from the reaction mixture and the combustible components are recovered.
IC ICM B01D053-14
ICS B01D053-18; C07D301-32
CC 27-2 (Heterocyclic Compounds (One Hetero Atom))
ST propylene oxide manuf oxidn waste gas recycling; explosion prevention propylene oxide manuf waste gas recycling
IT Solvents
(organic; process for the recovery of combustible components of a gas **stream** in the manufacture of **propylene** oxide)
IT Absorption
Epoxidation

Explosion prevention
Oxidation
Recycling
Waste gases
(process for the recovery of combustible components of a gas **stream** in the manufacture of **propylene** oxide)

IT Peroxides, preparation
RL: PUR (Purification or recovery); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(process for the recovery of combustible components of a gas **stream** in the manufacture of **propylene** oxide)

IT Noble gases, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(process for the recovery of combustible components of a gas **stream** in the manufacture of **propylene** oxide)

IT Alcohols, uses
Aromatic hydrocarbons, uses
Hydrocarbons, uses
Ketones, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(solvent; process for the recovery of combustible components of a gas **stream** in the manufacture of **propylene** oxide)

IT **75-56-9P**, Propylene oxide, preparation
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(process for the recovery of combustible components of a gas **stream** in the manufacture of **propylene** oxide)

IT 7782-44-7P, Oxygen, preparation
RL: PUR (Purification or recovery); PREP (Preparation)
(process for the recovery of combustible components of a gas **stream** in the manufacture of **propylene** oxide)

IT **115-07-1P**, Propylene, preparation
RL: PUR (Purification or recovery); RCT (Reactant); PREP (Preparation); **RACT (Reactant or reagent)**
(process for the recovery of combustible components of a gas **stream** in the manufacture of **propylene** oxide)

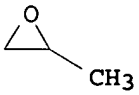
IT 71-43-2, Benzene, reactions 7722-84-1, Hydrogen peroxide, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(process for the recovery of combustible components of a gas **stream** in the manufacture of **propylene** oxide)

IT 124-38-9, Carbon dioxide, uses 7727-37-9, Nitrogen, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(process for the recovery of combustible components of a gas **stream** in the manufacture of **propylene** oxide)

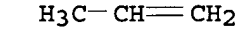
IT 67-56-1, Methanol, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(solvent; process for the recovery of combustible components of a gas **stream** in the manufacture of **propylene** oxide)

IT **75-56-9P**, Propylene oxide, preparation
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(process for the recovery of combustible components of a gas **stream** in the manufacture of **propylene** oxide)

RN 75-56-9 HCAPLUS
CN Oxirane, 2-methyl- (CA INDEX NAME)



IT **115-07-1P**, Propylene, preparation
RL: PUR (Purification or recovery); RCT (Reactant); PREP (Preparation);
**RACT (Reactant or reagent)**
(process for the recovery of combustible components of a gas **stream** in the manufacture of **propylene** oxide)
RN 115-07-1 HCAPLUS
CN 1-Propene (9CI) (CA INDEX NAME)



RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L31 ANSWER 12 OF 53 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2002:964717 HCAPLUS
DN 138:24631
TI Process for the recovery of combustible components of a gas **stream** in the manufacture of **propylene** oxide
IN Hofen, Willi; Thiele, Georg; Woll, Wolfgang
PA Degussa AG, Germany; UHDE GmbH
SO U.S. Pat. Appl. Publ., 7 pp.
CODEN: USXXCO
DT Patent
LA English
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | US 2002189450 | A1 | 20021219 | US 2002-174549 | 20020618 |
| | US 6749668 | B2 | 20040615 | | |
| PRAI | US 2001-298377P | P | 20010618 | | |

AB A process for the recovery of combustible components of a gas stream containing the combustible components and oxygen by selective absorption of the combustible components in a solvent, whereby during the absorption the gas phase is dispersed in a continuous liquid phase of the solvent. In a preferred embodiment the process is applied to give a process for the epoxidn. of propene with hydrogen peroxide in the alc. solvent in presence of a **catalyst**, wherein a gas stream including unreacted propene, propene oxide and oxygen from the decomposition of the hydrogen peroxide is separated from the epoxidn. reaction mixture and the combustible components in said gas stream are recovered using the process as described above.
IC ICM B01D053-14
INCL 095226000
CC 27-2 (Heterocyclic Compounds (One Hetero Atom))
ST propylene oxide manuf oxidn waste gas recycling
IT Solvents
(organic; process for the recovery of combustible components of a gas **stream** in the manufacture of **propylene** oxide)
IT Absorption
Epoxidation
Explosion prevention
Oxidation
Recycling
Waste gases
(process for the recovery of combustible components of a gas **stream** in the manufacture of **propylene** oxide)
IT Peroxides, preparation
RL: PUR (Purification or recovery); RCT (Reactant); PREP (Preparation);
RACT (Reactant or reagent)

(process for the recovery of combustible components of a gas **stream** in the manufacture of **propylene** oxide)

IT Noble gases, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(process for the recovery of combustible components of a gas **stream** in the manufacture of **propylene** oxide)

IT Alcohols, uses
Aromatic hydrocarbons, uses
Hydrocarbons, uses
Ketones, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(solvent; process for the recovery of combustible components of a gas **stream** in the manufacture of **propylene** oxide)

IT **75-56-9P**, Propylene oxide, preparation
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(process for the recovery of combustible components of a gas **stream** in the manufacture of **propylene** oxide)

IT 7782-44-7P, Oxygen, preparation
RL: PUR (Purification or recovery); PREP (Preparation)
(process for the recovery of combustible components of a gas **stream** in the manufacture of **propylene** oxide)

IT **115-07-1P**, Propylene, preparation
RL: PUR (Purification or recovery); RCT (Reactant); PREP (Preparation); **RACT (Reactant or reagent)**
(process for the recovery of combustible components of a gas **stream** in the manufacture of **propylene** oxide)

IT 7722-84-1, Hydrogen peroxide, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(process for the recovery of combustible components of a gas **stream** in the manufacture of **propylene** oxide)

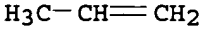
IT 67-56-1, Methanol, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(solvent; process for the recovery of combustible components of a gas **stream** in the manufacture of **propylene** oxide)

IT **75-56-9P**, Propylene oxide, preparation
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(process for the recovery of combustible components of a gas **stream** in the manufacture of **propylene** oxide)

RN 75-56-9 HCAPLUS
CN Oxirane, 2-methyl- (CA INDEX NAME)

IT **115-07-1P**, Propylene, preparation
RL: PUR (Purification or recovery); RCT (Reactant); PREP (Preparation); **RACT (Reactant or reagent)**
(process for the recovery of combustible components of a gas **stream** in the manufacture of **propylene** oxide)

RN 115-07-1 HCAPLUS
CN 1-Propene (9CI) (CA INDEX NAME)

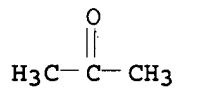


L31 ANSWER 13 OF 53 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2002:936943 HCAPLUS
DN 138:189766
TI YSZ aided oxidation of C2-C4 hydrocarbons into oxygenates over MoO3 or V2O5
AU Takehira, K.; Shishido, T.; Komatsu, T.; Hamakawa, S.; Kajioka, H.
CS Department of Applied Chemistry, Hiroshima University, Graduate School of Engineering, Higashi-hiroshima, 739-8527, Japan
SO Solid State Ionics (2002), 152-153, 641-646
CODEN: SSIOD3; ISSN: 0167-2738
PB Elsevier Science B.V.
DT Journal
LA English
AB MoO3 and V2O5 were deposited on the Au anode of the electrochem. reactor using yttria-stabilized zirconia as a solid electrolyte, and oxygen was pumped to each metal oxide through the YSZ by closing the elec. circuit. The system was used for the oxidation of C2-C4 hydrocarbons over MoO3 and V2O5 under the oxygen pumping conditions at 500°. Alkanes were not oxidized at all but alkenes were selectively oxidized to the corresponding aldehydes over MoO3, while alkanes were activated to initiate the oxidation reaction and alkenes were deeply oxidized over V2O5. Over MoO3, the highest selectivity to aldehyde was observed with isobutene (methacrolein) followed by propene (acrolein) and ethene (acetaldehyde). In the oxidation of alkanes over V2O5, the rate of reaction was logarithmically well correlated with the C-H bond energies of alkane, suggesting that the rate-determining step is H-abstraction from alkane. In both cases of using MoO3 and V2O5, a co-presence of gaseous oxygen with hydrocarbons resulted in decreasing selectivity of the aldehydes. It is likely that the oxygen species derived from the lattice oxygen of YSZ migrates to MoO3 and V2O5 and the activity for the selective oxidation of hydrocarbons depends on the nature of each metal oxide **catalyst.**
CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
ST yttria stabilized zirconia oxidn hydrocarbons oxygenate molybdenum vanadium oxide
IT Fuel cells
(solid electrolyte; yttria-stabilized zirconia aided oxidation of C2-C4 hydrocarbons into oxygenates over MoO3 or V2O5)
IT Oxidation **catalysts**
(yttria-stabilized zirconia aided oxidation of C2-C4 hydrocarbons into oxygenates over MoO3 or V2O5)
IT 1313-27-5, Molybdenum oxide, uses 1314-62-1, Vanadium oxide (V2O5), uses
RL: **CAT (Catalyst use)**; USES (Uses)
(yttria-stabilized zirconia aided oxidation of C2-C4 hydrocarbons into oxygenates over MoO3 or V2O5)
IT 1314-23-4, Zirconia, uses 1314-36-9, Yttria, uses
RL: DEV (Device component use); USES (Uses)
(yttria-stabilized zirconia aided oxidation of C2-C4 hydrocarbons into oxygenates over MoO3 or V2O5)
IT **67-64-1P**, Acetone, preparation 75-07-0P, Acetaldehyde, preparation 78-85-3P **107-02-8P**, 2-Propenal, preparation 124-38-9P, Carbon dioxide, preparation 630-08-0P, Carbon monoxide, preparation
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(yttria-stabilized zirconia aided oxidation of C2-C4 hydrocarbons into oxygenates over MoO3 or V2O5)
IT 74-85-1, Ethylene, reactions **115-07-1**, Propylene, reactions 115-11-7, Isobutylene, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(yttria-stabilized zirconia aided oxidation of C2-C4 hydrocarbons into

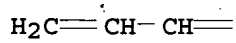
**oxygenates** over MoO3 or V2O5)

IT **67-64-1P**, Acetone, preparation **107-02-8P**, 2-Propenal, preparation
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(yttria-stabilized zirconia aided oxidation of C2-C4 hydrocarbons into oxygenates over MoO3 or V2O5)

RN 67-64-1 HCAPLUS
CN 2-Propanone (CA INDEX NAME)

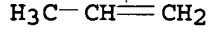


RN 107-02-8 HCAPLUS
CN 2-Propenal (9CI) (CA INDEX NAME)



IT **115-07-1**, Propylene, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(yttria-stabilized zirconia aided oxidation of C2-C4 hydrocarbons into **oxygenates** over MoO3 or V2O5)

RN 115-07-1 HCAPLUS
CN 1-Propene (9CI) (CA INDEX NAME)



RE.CNT 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L31 ANSWER 14 OF 53 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2002:182214 HCAPLUS
DN 136:218635
TI Cumene isopropylation manufacture process using purified benzene and **propylene** feedstock **streams** and methods for purification of the feedstocks
IN Wu, Albert H.; Wei, James T.
PA Sunoco, Inc. (R&M), USA
SO U.S., 5 pp., Cont.-in-part of U.S. Ser. No. 359,556, abandoned.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | US 6355851 | B1 | 20020312 | US 2000-711285 | 20001113 |
| | WO 2002057204 | A1 | 20020725 | WO 2001-US47385 | 20011107 |

W: AE, AG, AL, AU, BA, BB, BG, BR, BZ, CA, CN, CO, CR, CU, CZ, DM, DZ, EE, GD, GE, HR, HU, ID, IL, IN, IS, JP, KP, KR, LC, LK, LR, LT, LV, MA, MG, MK, MN, MX, NO, NZ, PL, RO, SG, SI, SK, TT, UA, UZ, VN, YU, ZA, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRAI US 1999-359556 B2 19990722
US 2000-711285. A 20001113

AB A zeolite-catalyzed cumene synthesis process is presented in which the benzene and propylene feedstocks are pre-treated to remove **catalyst** poisons. The benzene feedstock is pre-treated under pressure by contact with a hot clay bed at 200-500°, followed by distillation of the benzene feedstock to sep. the benzene from the higher-mol.-weight materials formed from olefinic poisons during the hot-clay treatment. The benzene feed is also subjected to a cold clay treatment where the benzene distillate is contacted with an ambient-temperature clay. The propylene feedstock is pre-treated by contact with alumina to remove trace sodium compds. and moisture, a mol. sieve to remove moisture, and two modified aluminas to remove **catalyst** poisons. The pre-treated propylene and benzene feedstocks are then reacted in the presence of a zeolite **catalyst** (e.g., MCM-22 zeolite) to form cumene without causing rapid degradation of the **catalyst**'s activity.

IC ICM C07C002-66
INCL 585448000
CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
Section cross-reference(s): 25, 48, 67
ST isopropylation benzene manuf cumene; propylene purifn benzene isopropylation manuf cumene; benzene purifn isopropylation manuf cumene; zeolite isopropylation **catalyst** poisoning inhibition manuf cumene
IT Isopropylation **catalysts**
(MCM-22 zeolites for the conversion of purified benzene with purified propylene into cumene)
IT Polymerization **catalysts**
(clays for the removal of unsatd. impurities in benzene streams to be used in the manufacture of cumene)
IT Clays, processes
RL: EPR (Engineering process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(for the purification of benzene in the manufacture of cumene)
IT Molecular sieves
(for the purification of propylene in the manufacture of cumene)
IT Zeolite MCM-22
RL: **CAT (Catalyst use)**; EPR (Engineering process); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(isopropylation **catalysts** for the conversion of purified benzene with purified propylene into cumene)
IT Adsorbents
(mol. sieves and alumina for the removal of moisture from propylene in the manufacture of cumene)
IT Distillation
(of clay-treated purified benzene in the manufacture of cumene)
IT Isopropylation
(of purified benzene with purified propylene into cumene)
IT 7732-18-5, Water, processes
RL: EPR (Engineering process); PEP (Physical, engineering or chemical process); REM (Removal or disposal); PROC (Process)
(absorptive removal from propylene feedstocks in the manufacture of cumene)
IT **98-82-8P**, Cumene
RL: EPR (Engineering process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); **PREP (Preparation)**; PROC (Process)
(cumene isopropylation manufacture process using purified benzene and **propylene** feedstock **streams** and methods for purification of the feedstocks)

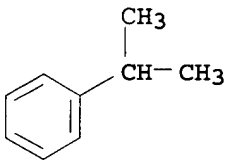
IT **115-07-1P**, Propene, preparation
RL: EPR (Engineering process); PEP (Physical, engineering or chemical process); PRP (Properties); PUR (Purification or recovery); RCT (Reactant); PREP (Preparation); PROC (Process); **RACT (Reactant or reagent)**
(cumene isopropylation manufacture process using purified benzene and **propylene** feedstock **streams** and methods for purification of the feedstocks)

IT 71-43-2P, Benzene, preparation
RL: EPR (Engineering process); PEP (Physical, engineering or chemical process); PUR (Purification or recovery); RCT (Reactant); PREP (Preparation); PROC (Process); RACT (Reactant or reagent)
(cumene isopropylation manufacture process using purified benzene and **propylene** feedstock **streams** and methods for purification of the feedstocks)

IT 1344-28-1, Alumina, processes
RL: EPR (Engineering process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(for the purification of propylene in the manufacture of cumene)

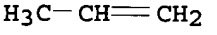
IT **98-82-8P**, Cumene
RL: EPR (Engineering process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); **PREP (Preparation)**; PROC (Process)
(cumene isopropylation manufacture process using purified benzene and **propylene** feedstock **streams** and methods for purification of the feedstocks)

RN 98-82-8 HCAPLUS
CN Benzene, (1-methylethyl)- (9CI) (CA INDEX NAME)



IT **115-07-1P**, Propene, preparation
RL: EPR (Engineering process); PEP (Physical, engineering or chemical process); PRP (Properties); PUR (Purification or recovery); RCT (Reactant); PREP (Preparation); PROC (Process); **RACT (Reactant or reagent)**
(cumene isopropylation manufacture process using purified benzene and **propylene** feedstock **streams** and methods for purification of the feedstocks)

RN 115-07-1 HCAPLUS
CN 1-Propene (9CI) (CA INDEX NAME)



RE.CNT 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L31 ANSWER 15 OF 53 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2002:107935 HCAPLUS
DN 136:169415
TI Integrated process for the production of cumene from propane and benzene.

IN Paggini, Alberto; Sanfilippo, Domenico; Picciotto, Elena
PA Snamprogetti S.p.A., Italy
SO U.S. Pat. Appl. Publ., 4 pp.
CODEN: USXXCO
DT Patent
LA English
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | US 2002016520 | A1 | 20020207 | US 2001-879190 | 20010613 |
| | IT 2000MI1326 | A1 | 20011214 | IT 2000-MI1326 | 20000614 |
| | IT 1318575 | B1 | 20030827 | | |
| | CA 2349900 | A1 | 20011214 | CA 2001-2349900 | 20010607 |
| | DE 10127720 | A1 | 20020228 | DE 2001-10127720 | 20010607 |
| | DE 10127720 | C2 | 20020718 | | |
| | RU 2200726 | C2 | 20030320 | RU 2001-117545 | 20010613 |
| PRAI | IT 2000-MI1326 | A | 20000614 | | |

AB An integrated process for the preparation of cumene comprises dehydrogenating a **stream** of propane to **propylene** in a dehydrogenation unit, eliminating the H2 and possible byproducts from the product stream, sending the **stream** containing 25-40 weight% **propylene** to an alkylation unit together with a stream of benzene with a molar ratio benzene/propylene = 8-10:1, distilling the alkylation product in a first distillation column to recover a light fraction of propane which is recycled to the dehydrogenation, and a heavy fraction which is distilled in a second distillation column to recover benzene at the head (recycled to the alkylation unit), and cumene with a purity of >99% at the tail. An apparatus diagram is given.

IC ICM C07C002-64
INCL 585323000
CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
Section cross-reference(s): 47
ST cumene prepn; propane dehydrogenation; benzene alkylation propene

IT Alkylation
(alkylation of benzene with propene; integrated process for the production of cumene from propane and benzene)

IT Alkali metal oxides
Zeolites (synthetic), uses
RL: **CAT (Catalyst use)**; USES (Uses)
(dehydrogenation **catalyst**; integrated process for the production of cumene from propane and benzene)

IT Dehydrogenation
(dehydrogenation of propane; integrated process for the production of cumene from propane and benzene)

IT Apparatus
(integrated process for the production of cumene from propane and benzene)

IT 1308-38-9, Dichromium trioxide, uses 7440-06-4, Platinum, uses 12024-21-4, Gallium oxide 21651-19-4, Tin monoxide
RL: **CAT (Catalyst use)**; USES (Uses)
(dehydrogenation **catalyst**; integrated process for the production of cumene from propane and benzene)

IT **115-07-1P**, Propylene, preparation
RL: IMF (Industrial manufacture); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); **RACT (Reactant or reagent)**
(integrated process for the production of cumene from propane and benzene)

IT **98-82-8P**, Cumene
RL: IMF (Industrial manufacture); SPN (Synthetic preparation); **PREP (Preparation)**
(integrated process for the production of cumene from propane and benzene)

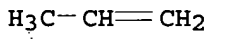
IT 71-43-2, Benzene, reactions 74-98-6, Propane, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)
(integrated process for the production of cumene from propane and benzene)

IT **115-07-1P**, Propylene, preparation
RL: IMF (Industrial manufacture); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); **RACT (Reactant or reagent)**
(integrated process for the production of cumene from propane and benzene)

RN 115-07-1 HCAPLUS

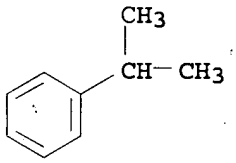
CN 1-Propene (9CI) (CA INDEX NAME)



IT **98-82-8P**, Cumene
RL: IMF (Industrial manufacture); SPN (Synthetic preparation); **PREP (Preparation)**
(integrated process for the production of cumene from propane and benzene)

RN 98-82-8 HCAPLUS

CN Benzene, (1-methylethyl)- (9CI) (CA INDEX NAME)



L31 ANSWER 16 OF 53 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2001:523517 HCAPLUS

DN 135:93006

TI Procedure for processing alkene and oxygen comprehensive mixtures from epoxidation reactions

IN Teles, Joaquim Henrique; Rehfinger, Alwin; Bassler, Peter; Rieber, Norbert; Hefner, Werner; Wenzel, Anne; Rudolf, Peter

PA Basf A.-G., Germany

SO Ger. Offen., 8 pp.
CODEN: GWXXBX

DT Patent

LA German

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | DE 10001401 | A1 | 20010719 | DE 2000-10001401 | 20000114 |
| | CA 2396406 | A1 | 20010719 | CA 2001-2396406 | 20010112 |
| | WO 2001051475 | A1 | 20010719 | WO 2001-EP347 | 20010112 |
| | W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW | | | | |
| | RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG | | | | |
| | AU 2001028468 | A5 | 20010724 | AU 2001-28468 | 20010112 |
| | EP 1248773 | A1 | 20021016 | EP 2001-942361 | 20010112 |
| | EP 1248773 | B1 | 20050525 | | |

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR

| | | | | | |
|---|---|---|---|---|---|
| | JP 2003519690 | T | 20030624 | JP 2001-551857 | 20010112 |
| | AT 296297 | T | 20050615 | AT 2001-942361 | 20010112 |
| | ES 2241833 | T3 | 20051101 | ES 2001-1942361 | 20010112 |
| | US 2003004387 | A1 | 20030102 | US 2002-169102 | 20020712 |
| | US 6712942 | B2 | 20040330 | | |
| | ZA 2002005591 | A | 20031003 | ZA 2002-5591 | 20020712 |
| PRAI | DE 2000-10001401 | A | 20000114 | | |
| | WO 2001-EP347 | W | 20010112 | | |

AB A procedure for processing an epoxidn. (e.g., **propylene** oxide manufacture) reaction mixture **stream**, comprehensively containing an alkene and oxygen, in which (i) oxygen nondistillatively is removed from the mixture, and (ii) from the mixture (G2) the alkene distillate is removed.

IC ICM C07C007-148
ICS C07C007-04; C07C011-00; C07C011-06; C07D301-19

CC 35-2 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 45, 48

ST epoxidn reaction mixt alkene recovery; methyloxirane manuf reaction mixt propene recovery

IT Hydrocarbons, preparation
RL: PUR (Purification or recovery); REM (Removal or disposal); PREP (Preparation); PROC (Process)
(oxy; in a procedure for processing alkene and oxygen comprehensive mixts. from epoxidn. reactions)

IT Epoxidation
(procedure for processing alkene and oxygen comprehensive mixts. from epoxidn. reactions)

IT Epoxides
RL: MSC (Miscellaneous)
(procedure for processing alkene and oxygen comprehensive mixts. from epoxidn. reactions)

IT Alkenes, preparation
RL: PUR (Purification or recovery); PREP (Preparation)
(procedure for processing alkene and oxygen comprehensive mixts. from epoxidn. reactions)

IT 7440-05-3, Palladium, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(**catalyst** in a procedure for processing alkene and oxygen comprehensive mixts. from epoxidn. reactions)

IT **75-56-9P**, Methyloxirane, preparation
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(procedure for processing alkene and oxygen comprehensive mixts. from epoxidn. reactions)

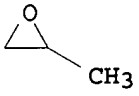
IT **115-07-1P**, Propene, preparation
RL: PUR (Purification or recovery); RCT (Reactant); PREP (Preparation); **RACT (Reactant or reagent)**
(procedure for processing alkene and oxygen comprehensive mixts. from epoxidn. reactions)

IT 7722-84-1, Hydrogen peroxide, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(procedure for processing alkene and oxygen comprehensive mixts. from epoxidn. reactions)

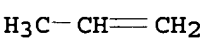
IT 1344-28-1, γ-Alumina, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(γ-, support; **catalyst** in a procedure for processing alkene and oxygen comprehensive mixts. from epoxidn. reactions)

IT **75-56-9P**, Methyloxirane, preparation
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(procedure for processing alkene and oxygen comprehensive mixts. from

epoxidn. reactions)
RN 75-56-9 HCAPLUS
CN Oxirane, 2-methyl- (CA INDEX NAME)



IT **115-07-1P**, Propene, preparation
RL: PUR (Purification or recovery); RCT (Reactant); PREP (Preparation);
**RACT (Reactant or reagent)**
(procedure for processing alkene and oxygen comprehensive mixts. from epoxidn. reactions)
RN 115-07-1 HCAPLUS
CN 1-Propene (9CI) (CA INDEX NAME)



L31 ANSWER 17 OF 53 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2001:112320 HCAPLUS
DN 134:164826
TI Manufacture of acrolein and acrolein derivatives from Diels-Alder reaction or Michael addition
IN Etzkorn, William George; Galley, Richard A.; Snead, Thomas E.; Brockwell, Jonathan Lester; Young, Mark Anderson; Maher, John Michael; Warren, Barbara Knight
PA Union Carbide Chemicals and Plastics Technology Corporation, USA
SO U.S., 11 pp., Cont.-in-part of WO9736848.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 3

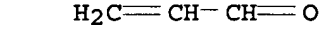
| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI US 6187963 | B1 | 20010213 | US 1998-169798 | 19981009 |
| WO 9736848 | A1 | 19971009 | WO 1997-US5100 | 19970327 |
| W: GH, KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG | | | | |
| RW: AU, BB, BG, BR, CA, CN, CZ, HU, IS, JP, KP, KR, LK, LR, LV, MK, MX, NO, NZ, PL, SG, SI, TR, TT, US, UZ, VN, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | | |
| EP 891316 | A1 | 19990120 | EP 1997-917687 | 19970327 |
| EP 891316 | B1 | 20030521 | | |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI | | | | |
| PRAI EP 1997-917687 | A | 19970327 | | |
| WO 1997-US5100 | A2 | 19970327 | | |
| US 1996-14507P | P | 19960401 | | |
| US 1996-14510P | P | 19960401 | | |
| US 1996-14678P | P | 19960401 | | |

AB A process for producing an acrolein derivative comprises (i) passing a **propylene** feed **stream** comprising **propylene**, oxygen, and a recycle gas comprising propane, oxygen, and at least one of carbon monoxide and carbon dioxide to an acrolein reaction zone wherein

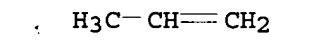
the **propylene** feed **stream** is contacted with an acrolein reaction **catalyst** at conditions effective to promote the formation of acrolein to provide an acrolein effluent stream comprising acrolein, propane, acetaldehyde and water; (ii) passing the acrolein effluent stream to an acrolein separation zone wherein the acrolein effluent stream is partially condensed to provide a liquid acrolein product stream comprising acrolein, acetaldehyde, and water and a recycle gas stream comprising the recycle gas; (iii) passing the acrolein product stream and a co-reactant capable of undergoing a Diels-Alder reaction or Michael addition with acrolein to an acrolein derivative reaction zone and contacting the acrolein and co-reactant under conditions effective to convert the acrolein and the co-reactant into an acrolein derivative; and (iv) recycling at least a portion of the recycle gas stream to the acrolein reaction zone. The process is characterized in that the **propylene** feed **stream** comprises an amount of propane of from about 5 to 70 volume% and effective to provide a propylene-to-acrolein reaction efficiency of from about 75 to 90 mol%.

IC C07C027-10; C07C045-27; C07C045-32
INCL 568469900
CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
Section cross-reference(s): 23
ST acrolein deriv manuf; Diels Alder reaction acrolein; Michael addn acrolein
IT Diels-Alder reaction
Dimerization
Michael reaction
(manufacture of acrolein and acrolein derivs. from Diels-Alder reaction or Michael addition)
IT 75-07-0P, Acetaldehyde, preparation
RL: BYP (Byproduct); PREP (Preparation)
(manufacture of acrolein and acrolein derivs. from Diels-Alder reaction or Michael addition)
IT 100-73-2P, 2-Formyl-3,4-dihydro-2H-pyran 108-99-6P, β-Picoline 110-86-1P, Pyridine, preparation 111-30-8P, Glutaraldehyde 504-63-2P, 1,3-Propanediol 1321-16-0P, Tetrahydrobenzaldehyde 3268-49-3P, 3-(Methylthio)propanal 31906-04-4P, 4-(4-Hydroxy-4-methylpentyl)-3-cyclohexene-1-carboxaldehyde 75454-86-3P 84315-07-1P
RL: IMF (Industrial manufacture); PREP (Preparation)
(manufacture of acrolein and acrolein derivs. from Diels-Alder reaction or Michael addition)
IT **107-02-8P**, Acrolein, preparation 2134-29-4P, 3-Hydroxypropionaldehyde 4454-05-1P, 2-Methoxy-3,4-dihydro-2H-pyran
RL: IMF (Industrial manufacture); RCT (Reactant); **PREP (Preparation)**; RACT (Reactant or reagent)
(manufacture of acrolein and acrolein derivs. from Diels-Alder reaction or Michael addition)
IT 56-81-5, 1,2,3-Propanetriol, reactions 57-55-6, Propylene glycol, reactions 64-17-5, Ethanol, reactions 64-19-7, Acetic acid, reactions 65-85-0, Benzoic acid, reactions 67-56-1, Methanol, reactions 67-63-0, Isopropanol, reactions 74-93-1, Methyl mercaptan, reactions 79-09-4, Propionic acid, reactions 106-99-0, Butadiene, reactions 107-18-6, Allyl alcohol, reactions 107-21-1, Ethylene glycol, reactions 107-25-5, Methyl vinyl ether 108-24-7, Acetic anhydride **115-07-1**, Propylene, reactions 115-77-5, Pentaerythritol, reactions 123-35-3, Myrcene 543-39-5 7664-41-7, Ammonia, reactions 7732-18-5, Water, reactions 30700-92-6
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(manufacture of acrolein and acrolein derivs. from Diels-Alder reaction or Michael addition)
IT **107-02-8P**, Acrolein, preparation
RL: IMF (Industrial manufacture); RCT (Reactant); **PREP**

**(Preparation)**; RACT (Reactant or reagent)
(manufacture of acrolein and acrolein derivs. from Diels-Alder reaction or Michael addition)
RN 107-02-8 HCAPLUS
CN 2-Propenal (9CI) (CA INDEX NAME)



IT **115-07-1**, Propylene, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(manufacture of acrolein and acrolein derivs. from Diels-Alder reaction or Michael addition)
RN 115-07-1 HCAPLUS
CN 1-Propene (9CI) (CA INDEX NAME)



RE.CNT 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L31 ANSWER 18 OF 53 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2000:909250 HCAPLUS
DN 134:43711
TI Oxidative processes for the manufacture of acrolein from propylene and oxygen
IN Etzkorn, William George; Brockwell, Jonathan Lester; Young, Mark Anderson; Maher, John Michael; Warren, Barbara Knight
PA Union Carbide Chemicals and Plastics Technology Corporation, USA
SO U.S., 10 pp., Cont.-in-part of Appl. No. PCT/US97/05100.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 3

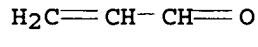
| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | US 6166263 | A | 20001226 | US 1998-169335 | 19981009 |
| | WO 9736848 | A1 | 19971009 | WO 1997-US5100 | 19970327 |
| | W: GH, KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG | | | | |
| | RW: AU, BB, BG, BR, CA, CN, CZ, HU, IS, JP, KP, KR, LK, LR, LV, MK, MX, NO, NZ, PL, SG, SI, TR, TT, US, UZ, VN, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | | |
| PRAI | WO 1997-US5100 | A2 | 19970327 | | |
| | US 1996-14507P | P | 19960401 | | |
| | US 1996-14510P | P | 19960401 | | |
| | US 1996-14678P | P | 19960401 | | |

AB Acrolein is produced in high yield and selectivity in a process comprising: (i) passing a **propylene feedstream** comprising **propylene**, oxygen and a recycle gas comprising propane, oxygen and carbon monoxide and/or carbon dioxide to an acrolein reaction zone where the **propylene feedstream** is contacted with an acrolein reaction **catalyst** to provide an acrolein effluent stream comprising acrolein, propane, acetaldehyde and water; (ii) passing the acrolein effluent stream to an acrolein separation zone where the acrolein effluent stream is partially condensed to provide a

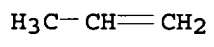
liquid acrolein product stream comprising acrolein, acetaldehyde and water and a recycle gas stream comprising the recycle gas; and (iii) recycling a portion of the recycle gas stream to the acrolein reaction zone. The **propylene feedstream** comprises 5-70 volume% propane and is effective to provide a propylene-to-acrolein reaction efficiency of 75-90 mol%. The presence of propane in the propylene-to-acrolein reaction can enhance the efficiency of the processes.

IC C07C045-32
INCL 568469900
CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
Section cross-reference(s): 23, 48
ST acrolein manuf propylene oxidn
IT Oxidation
(gas-phase; manufacture of acrolein from propylene and oxygen via)
IT Addition reaction
(of acrolein)
IT 67-56-1, Methanol, reactions 107-18-6, Allyl alcohol, reactions
107-25-5, Vinyl methyl ether 115-77-5, Pentaerythritol, reactions
7732-18-5, Water, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(addition reaction of acrolein with)
IT 74-93-1, Methanethiol, reactions 106-99-0, Butadiene, reactions
543-39-5
RL: RCT (Reactant); RACT (Reactant or reagent)
(addition reactions of acrolein with)
IT 75-07-0P, Acetaldehyde, preparation
RL: BYP (Byproduct); PREP (Preparation)
(oxidative processes for the manufacture of acrolein from propylene and oxygen)
IT **107-02-8P**, Acrolein, preparation
RL: IMF (Industrial manufacture); RCT (Reactant); **PREP (Preparation)**; RACT (Reactant or reagent)
(oxidative processes for the manufacture of acrolein from propylene and oxygen)
IT 74-98-6, Propane, uses
RL: MOA (Modifier or additive use); USES (Uses)
(oxidative processes for the manufacture of acrolein from propylene and oxygen)
IT 124-38-9, Carbon dioxide, uses 630-08-0, Carbon monoxide, uses
RL: NUU (Other use, unclassified); USES (Uses)
(oxidative processes for the manufacture of acrolein from propylene and oxygen)
IT **115-07-1**, Propene, reactions 7782-44-7, Oxygen, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(oxidative processes for the manufacture of acrolein from propylene and oxygen)
IT 2134-29-4P, 3-Hydroxypropionaldehyde
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation and reaction of)
IT 111-30-8P, Glutaraldehyde
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation of)
IT 78-19-3P 100-73-2P, 2-Formyl-3,4-dihydro-2H-pyran 504-63-2P, 1,3-Propanediol 1321-16-0P, Tetrahydrobenzaldehyde 2806-84-0P, 3-(Methoxy)propionaldehyde 3268-49-3P 4454-05-1P, 2-Methoxy-3,4-dihydro-2H-pyran 31906-04-4P, 4-(4-Hydroxy-4-methylpentyl)-3-cyclohexene-1-carboxaldehyde 84315-07-1P
RL: SPN (Synthetic preparation); PREP (Preparation)

(preparation of)
IT **107-02-8P**, Acrolein, preparation
RL: IMF (Industrial manufacture); RCT (Reactant); **PREP (Preparation)**; RACT (Reactant or reagent)
(oxidative processes for the manufacture of acrolein from propylene and oxygen)
RN 107-02-8 HCAPLUS
CN 2-Propenal (9CI) (CA INDEX NAME)



IT **115-07-1**, Propene, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(oxidative processes for the manufacture of acrolein from propylene and oxygen)
RN 115-07-1 HCAPLUS
CN 1-Propene (9CI) (CA INDEX NAME)



RE.CNT 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L31 ANSWER 19 OF 53 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2000:260260 HCAPLUS
DN 132:295369
TI Process for oxidizing an organic compound having at least one C-C double bond
IN Muller, Ulrich; Grosch, Georg Heinrich; Stein, Bernd; Rieber, Norbert
PA BASF Aktiengesellschaft, Germany
SO PCT Int. Appl., 32 pp.
CODEN: PIXXD2
DT Patent
LA German
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | WO 2000021945 | A1 | 20000420 | WO 1999-EP7738 | 19991014 |
| | W: AL, AU, BG, BR, BY, CA, CN, CZ, GE, HU, ID, IL, IN, JP, KR, KZ, LT, LV, MK, MX, NO, NZ, PL, RO, RU, SG, SI, SK, TR, UA, US, ZA, AM, AZ, KG, MD, TJ, TM | | | | |
| | RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE | | | | |
| | DE 19847629 | A1 | 20000420 | DE 1998-19847629 | 19981015 |
| | CA 2346888 | A1 | 20000420 | CA 1999-2346888 | 19991014 |
| | AU 9962027 | A | 20000501 | AU 1999-62027 | 19991014 |
| | BR 9914569 | A | 20010703 | BR 1999-14569 | 19991014 |
| | EP 1121350 | A1 | 20010808 | EP 1999-970389 | 19991014 |
| | R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO | | | | |
| | JP 2002527428 | T | 20020827 | JP 2000-575851 | 19991014 |
| | IN 2001CN00529 | A | 20050520 | IN 2001-CN529 | 20010412 |
| | US 6348607 | B1 | 20020219 | US 2001-806514 | 20010416 |
| PRAI | DE 1998-19847629 | A | 19981015 | | |
| | WO 1999-EP7738 | W | 19991014 | | |

AB An organic compound having a C:C bond or a mixture of ≥2 such compds. is

oxidized by a process which includes the following step: reaction of the organic compd(s). with a medium containing O2 and CO in the presence of a heterogeneous **catalyst.** Thus, Si(OEt)4 504, Ti(OPr-iso)4 70.4, EtOH 720, iso-PrOH 146, dodecylamine 120, and 10% HCl 17.6 g were stirred in 1560 g H2O for 20 h, the precipitate was filtered, washed, dried, calcined 5 h at 500° in air, and treated with HAuCl4 in aqueous suspension, and the product was recovered and calcined 12 h at 400° in air to give a **catalyst** containing 0.87% Au, 6.2% Ti, and 25 ppm Cl. When a mixture of propylene 10, O2 20, CO 5, and Ar 10 mL/min was saturated with water vapor and passed over 2 g of the **catalyst** in a tubular reactor at 60°, the product gas after 3 h contained propylene oxide 200, acrolein 10, acetone 6, and propionaldehyde <5 ppm, whereas when the CO was omitted from the feed **stream** no detectable **propylene** oxide (i.e., <5 ppm) or acrolein or acetone was produced.

IC ICM C07D301-08
ICS C07D301-10

CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
Section cross-reference(s): 35

ST propylene epoxidn carbon monoxide; propylene oxide manuf gas phase

IT Oxidation
(of unsatd. organic compds. by mol. oxygen in presence of carbon monoxide)

IT **67-64-1P**, Acetone, preparation **107-02-8P**, Acrolein, preparation
RL: BYP (Byproduct); **PREP (Preparation)**
(epoxidn. of propylene)

IT 7440-32-6, Titanium, uses 7440-57-5, Gold, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(epoxidn. of propylene)

IT **75-56-9P**, Propylene oxide, preparation
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(epoxidn. of propylene)

IT **115-07-1**, Propylene, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(epoxidn. of propylene)

IT 630-08-0, Carbon monoxide, uses 1333-74-0, Hydrogen, uses
RL: NUU (Other use, unclassified); USES (Uses)
(in epoxidn. of propylene)

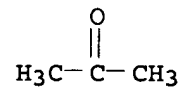
IT 78-10-4, Tetraethoxysilane 124-22-1, Dodecylamine 546-68-9, Tetraisopropyl orthotitanate 16903-35-8, Tetrachloroauric acid
RL: RCT (Reactant); RACT (Reactant or reagent)
(in preparation of propylene epoxidn. **catalyst**)

IT 7631-86-9, Silica, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(support; epoxidn. of propylene)

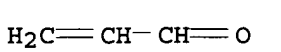
IT 7732-18-5, Water, uses
RL: NUU (Other use, unclassified); USES (Uses)
(vapor; in epoxidn. of propylene)

IT **67-64-1P**, Acetone, preparation **107-02-8P**, Acrolein, preparation
RL: BYP (Byproduct); **PREP (Preparation)**
(epoxidn. of propylene)

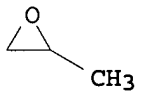
RN 67-64-1 HCAPLUS
CN 2-Propanone (CA INDEX NAME)



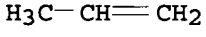
RN 107-02-8 HCAPLUS
CN 2-Propenal (9CI) (CA INDEX NAME)



IT **75-56-9P**, Propylene oxide, preparation
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(epoxidn. of propylene)
RN 75-56-9 HCAPLUS
CN Oxirane, 2-methyl- (CA INDEX NAME)



IT **115-07-1**, Propylene, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(epoxidn. of propylene)
RN 115-07-1 HCAPLUS
CN 1-Propene (9CI) (CA INDEX NAME)



RE.CNT 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L31 ANSWER 20 OF 53 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2000:127583 HCAPLUS
DN 132:167975
TI Manufacture of acrolein and/or acrylic acid from propane
IN Machhammer, Otto; Tenten, Andreas; Jachow, Harald; Haupt, Susanne; Arnold, Heiko; Unverricht, Signe
PA BASF A.-G., Germany
SO Ger. Offen., 15 pp.
CODEN: GWXXBX
DT Patent
LA German
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | DE 19837518 | A1 | 20000224 | DE 1998-19837518 | 19980819 |
| | WO 2000010960 | A1 | 20000302 | WO 1999-EP5791 | 19990810 |
| | W: AL, AU, BG, BR, BY, CA, CN, CZ, GE, HR, HU, ID, IL, IN, JP, KR, KZ, LT, LV, MK, MX, NO, NZ, PL, RO, RU, SG, SI, SK, TR, UA, US, ZA, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | | |
| | RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE | | | | |
| | AU 9955125 | A1 | 20000314 | AU 1999-55125 | 19990810 |
| | EP 1109773 | A1 | 20010627 | EP 1999-941556 | 19990810 |
| | R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI | | | | |
| | BR 9914611 | A | 20010807 | BR 1999-14611 | 19990810 |
| | JP 2002523389 | T | 20020730 | JP 2000-566234 | 19990810 |

US 6388129 B1 20020514 US 2001-763223 20010220
PRAI DE 1998-19837518 A 19980819
WO 1999-EP5791 W 19990810

AB In the manufacture of acrolein and/or acrylic acid from propane, the propane in a first reaction stage is subjected to partial oxidative dehydrogenation under homogeneous and/or heterogeneous catalysis with O2-enriched air to form propene, the product gas mixture formed in the first reaction stage is treated to remove at least some of the N, and the remaining gas is subjected to gas-phase catalytic oxidation to form acrolein and/or acrylic acid. Thus 15.4 mol/h 9:1 O-N mixture was combined with 79.7 mol/h of a recycle **stream** containing propane 87.7, **propylene** 0.4, O 4.2, N 2.1, H2O 2.5, CO 0.8, CO2 1.9, and other 0.5 volume% and oxidized at 430°/2.2 bars in a fixed bed of mixed metal oxide **catalyst** to give a product stream (102.3 mol/h) containing propane 59.9, propylene 6.5, O 4.8, N 3.2, H2O 16.7, CO 4.3, CO2 4.0, acrolein 0.2, and other 0.4 volume%, which was compressed to 36 bars, cooled to 70°, and passed through a 30-plate rectification column to remove 17.4 mol/h of a purge stream overhead. The remaining stream (89.4 mol/h) was combined with 13.6 mol/h 9:1 O-N mixture and 9.1 mol/h propane to give a propylene oxidation feed containing acrolein 0.2, propane 65.0, propylene 6.1, O 11.4, N 1.3, H2O 15.9, and other 0.1 volume%, which was oxidized at 350°/2 bars over a 2nd mixed metal oxide **catalyst** to form acrolein and then mixed with an addnl. 2.4 mol/h 9:1 O-N mixture and oxidized to acrylic acid in a 3rd stage over a 3rd mixed metal oxide **catalyst** at 270°/1.8 bars, yielding a product stream (107.8 mol/h) containing acrolein 0.1, acrylic acid 5.2, AcOH 0.1, propane 64.9, propylene 0.3, O 3.0, N 1.5, H2O 22.7, CO 0.6, CO2 1.4, and other 0.2 volume%, which was quenched and fractionated to produce 5.4 mol/h acrylic acid of ≥98% purity as well as the recycle stream and an acidic aqueous waste stream, for an overall yield of acrylic acid based on propane supplied of 59.3 mol%.

IC ICM C07C045-35
ICS C07C047-22; C07C057-055; C07C005-333; C07C011-06

CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
Section cross-reference(s): 23, 35

ST propane dehydrogenation oxidn; acrylic acid manuf gas phase oxidn; acrolein manuf gas phase oxidn

IT Oxidation
(gas-phase, catalytic; in manufacture of acrolein and/or acrylic acid from propane)

IT Dehydrogenation
(oxidative; in manufacture of acrolein and/or acrylic acid from propane)

IT **79-10-7P**, Acrylic acid, preparation
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(manufacture of acrolein and/or acrylic acid from propane)

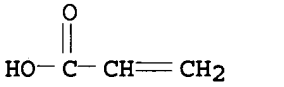
IT **107-02-8P**, Acrolein, preparation **115-07-1P**, Propylene, preparation
RL: IMF (Industrial manufacture); RCT (Reactant); **PREP (Preparation)**; **RACT (Reactant or reagent)**
(manufacture of acrolein and/or acrylic acid from propane)

IT 74-98-6, Propane, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(manufacture of acrolein and/or acrylic acid from propane)

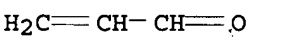
IT 7727-37-9, Nitrogen, processes
RL: REM (Removal or disposal); PROC (Process)
(separation from intermediate stream in manufacture of acrolein and/or acrylic acid from propane)

IT **79-10-7P**, Acrylic acid, preparation
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(manufacture of acrolein and/or acrylic acid from propane)

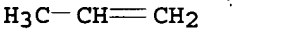
RN 79-10-7 HCAPLUS
CN 2-Propenoic acid (9CI) (CA INDEX NAME)



IT **107-02-8P**, Acrolein, preparation **115-07-1P**, Propylene, preparation
RL: IMF (Industrial manufacture); RCT (Reactant); **PREP (Preparation)**; **RACT (Reactant or reagent)**
(manufacture of acrolein and/or acrylic acid from propane)
RN 107-02-8 HCAPLUS
CN 2-Propenal (9CI) (CA INDEX NAME)



RN 115-07-1 HCAPLUS
CN 1-Propene (9CI) (CA INDEX NAME)



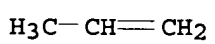
L31 ANSWER 21 OF 53 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1999:193877 HCAPLUS
DN 130:252779
TI Process stream purification in hydroperoxide manufacture
IN Lin, Shaw-Chan; Danner, Jeffery B.; Jubin, John C., Jr.
PA Arco Chemical Technology, L.P., USA
SO U.S., 4 pp.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI US 5883268 | A | 19990316 | US 1997-955412 | 19971023 |
| PRAI US 1997-955412 | | 19971023 | | |

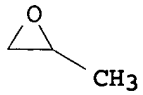
AB Hydroperoxides, especially ethylbenzene hydroperoxide, suitable for epoxidizing an olefin, especially propylene, using a solid heterogeneous **catalyst** is prepared by (a) contacting crude ethylbenzene hydroperoxide with an aqueous solution of an alkali metal base, such as sodium carbonate, and separating a base-contaminated deacidified organic stream from an aqueous stream, (b) contacting the deacidified organic stream with water and separating the mixture into an organic-contaminated aqueous phase and an organic phase having a reduced alkali metal content, and (c) contacting the organic-contaminated aqueous phase with an extractive hydrocarbon such as ethylbenzene, benzene, cyclohexane or C2-10 alkanes, and separating the mixture into a purified aqueous phase containing less organic contaminants and an organic phase comprising the extractive hydrocarbon and organic impurities from the organic-contaminated aqueous phase. The aqueous base

treatment greatly reduces the deactivation of the solid **catalyst** in epoxidn.

IC ICM C07D301-19
INCL 549529000
CC 35-2 (Chemistry of Synthetic High Polymers)
ST ethylbenzene hydroperoxide purifn; propylene epoxidn **catalyst** activity hydroperoxide purity; alkali metal base purifn ethylbenzene hydroperoxide; sodium carbonate purifn ethylbenzene hydroperoxide
IT Alkali metal salts
RL: NUU (Other use, unclassified); USES (Uses)
(in process stream purification in ethylbenzene hydroperoxide manufacture for
reduced **catalyst** deactivation in epoxidn. of olefins)
IT Epoxidation **catalysts**
(process stream purification in ethylbenzene hydroperoxide manufacture for reduced **catalyst** deactivation in epoxidn. of olefins)
IT 71-43-2, Benzene, uses 100-41-4, Ethylbenzene, uses 110-82-7, Cyclohexane, uses
RL: NUU (Other use, unclassified); USES (Uses)
(in process stream purification in ethylbenzene hydroperoxide manufacture)
IT 497-19-8, Sodium carbonate, uses
RL: NUU (Other use, unclassified); USES (Uses)
(in process stream purification in ethylbenzene hydroperoxide manufacture for
reduced **catalyst** deactivation in epoxidn. of olefins)
IT **115-07-1**, **Propylene**, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(process **stream** purification in ethylbenzene hydroperoxide manufacture for reduced **catalyst** deactivation in epoxidn.)
IT **75-56-9P**, **Propylene** oxide, preparation
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(process **stream** purification in ethylbenzene hydroperoxide manufacture for reduced **catalyst** deactivation in epoxidn. of olefins)
IT 3071-32-7P, Ethylbenzene hydroperoxide
RL: PUR (Purification or recovery); PREP (Preparation)
(process stream purification in hydroperoxide manufacture)
IT **115-07-1**, **Propylene**, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(process **stream** purification in ethylbenzene hydroperoxide manufacture for reduced **catalyst** deactivation in epoxidn.)
RN 115-07-1 HCAPLUS
CN 1-Propene (9CI) (CA INDEX NAME)



IT **75-56-9P**, **Propylene** oxide, preparation
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(process **stream** purification in ethylbenzene hydroperoxide manufacture for reduced **catalyst** deactivation in epoxidn. of olefins)
RN 75-56-9 HCAPLUS
CN Oxirane, 2-methyl- (CA INDEX NAME)



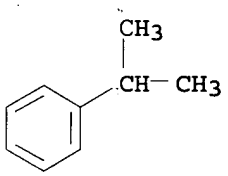
RE.CNT 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L31 ANSWER 22 OF 53 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1999:136863 HCAPLUS
DN 130:184078
TI Process to alkylate an aromatic with a dilute **stream** comprising **propylene** and ethylene
IN Hendriksen, Dan E.; Lattner, James R.; Wristers, Jos P.
PA Exxon Chemical Patents Inc., USA
SO PCT Int. Appl., 26 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

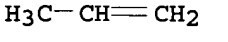
| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI WO 9908984 | A1 | 19990225 | WO 1998-US17075 | 19980818 |
| W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | | |
| RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG | | | | |
| CA 2293443 | A1 | 19990225 | CA 1998-2293443 | 19980818 |
| AU 9889120 | A | 19990308 | AU 1998-89120 | 19980818 |
| AU 745785 | B2 | 20020328 | | |
| US 6063976 | A | 20000516 | US 1998-135919 | 19980818 |
| EP 1005442 | A1 | 20000607 | EP 1998-940962 | 19980818 |
| EP 1005442 | B1 | 20030402 | | |
| R: BE, DE, ES, FR, GB, IT, NL, SE | | | | |
| JP 2001515056 | T | 20010918 | JP 2000-509672 | 19980818 |
| ES 2197499 | T3 | 20040101 | ES 1998-940962 | 19980818 |
| PRAI US 1997-55999P | P | 19970818 | | |
| WO 1998-US17075 | W | 19980818 | | |

AB The method comprises (a) contacting a first reaction mixture comprising an aromatic and a dilute **stream** comprising ethylene and **propylene** with a large pore microporous solid acid **catalyst**, preferably a large pore zeolite **catalyst**, which is effective to promote alkylation of the aromatic under first conditions effective to maintain a liquid phase comprising the aromatic and effective to cause the propylene to alkylate the aromatic but substantially ineffective to cause the ethylene to alkylate the aromatic, forming propylated aromatic and a second dilute stream comprising ethylene but substantially depleted of propylene, and (b) recovering the propylated aromatic
IC ICM C07C002-66
CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
Section cross-reference(s): 67
ST propylene benzene alkylation; zeolite alkylation **catalyst** benzene; cumene prepn propylene benzene alkylation; ethylene benzene alkylation; refinery offgas stream benzene alkylation
IT Silicoaluminophosphate zeolites
RL: **CAT (Catalyst use)**; USES (Uses)
(SAPO-5, alkylation **catalysts**; alkylation of benzene with dilute **streams** containing **propylene** and ethylene)
IT Beta zeolites
Y zeolites

RL: **CAT (Catalyst use)**; USES (Uses)
(alkylation **catalysts**; alkylation of benzene with dilute **streams** containing **propylene** and ethylene)
IT Alkylation
(alkylation of benzene with dilute **streams** containing **propylene** and ethylene)
IT Alkylation **catalysts**
(zeolites; alkylation of benzene with dilute **streams** containing **propylene** and ethylene)
IT **98-82-8P**, Cumene 100-41-4P, Ethylbenzene, preparation
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(alkylation of benzene with dilute **streams** containing **propylene** and ethylene)
IT 71-43-2, Benzene, reactions 74-85-1, Ethylene, reactions
**115-07-1**, Propylene, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(alkylation of benzene with dilute **streams** containing **propylene** and ethylene)
IT **98-82-8P**, Cumene
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(alkylation of benzene with dilute **streams** containing **propylene** and ethylene)
RN 98-82-8 HCAPLUS
CN Benzene, (1-methylethyl)- (9CI) (CA INDEX NAME)



IT **115-07-1**, Propylene, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(alkylation of benzene with dilute **streams** containing **propylene** and ethylene)
RN 115-07-1 HCAPLUS
CN 1-Propene (9CI) (CA INDEX NAME)



RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L31 ANSWER 23 OF 53 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1999:34510 HCAPLUS
DN 130:95961
TI Epoxidation process using supported silver **catalysts** treated with carbon dioxide
IN Cooker, Bernard; Gaffney, Anne M.; Jewson, Jennifer D.; Kahn, Andrew P.
PA Arco Chemical Technology, L.P., USA
SO U.S., 8 pp.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | US 5856534 | A | 19990105 | US 1997-993466 | 19971218 |
| | CA 2310429 | A1 | 19990701 | CA 1998-2310429 | 19980831 |
| | WO 9932471 | A1 | 19990701 | WO 1998-EP5515 | 19980831 |
| | W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | | |
| | RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG | | | | |
| | AU 9910227 | A | 19990712 | AU 1999-10227 | 19980831 |
| | EP 1040104 | A1 | 20001004 | EP 1998-952582 | 19980831 |
| | EP 1040104 | B1 | 20021120 | | |
| | R: BE, DE, ES, FR, GB, IT, NL | | | | |
| | BR 9813687 | A | 20001010 | BR 1998-13687 | 19980831 |
| | JP 2001526279 | T | 20011218 | JP 2000-525408 | 19980831 |
| | ES 2184328 | T3 | 20030401 | ES 1998-952582 | 19980831 |
| PRAI | US 1997-993466 | A | 19971218 | | |
| | WO 1998-EP5515 | W | 19980831 | | |

AB The catalytic performance of a supported silver **catalyst** in a propylene epoxidn. process is improved by first contacting the **catalyst** at an elevated temperature with a treatment stream comprised of carbon dioxide. The carbon dioxide-treated **catalyst** is thereafter contacted with a **feedstream** containing **propylene** , mol. oxygen, but essentially no carbon dioxide under conditions effective to form propylene oxide.

IC ICM C07D301-10

INCL 549534000

CC 35-2 (Chemistry of Synthetic High Polymers)

ST silver epoxidn **catalyst** propylene oxide manuf; carbon dioxide treatment silver epoxidn **catalyst**

IT Epoxidation
(epoxidn. process using supported silver **catalysts** treated with carbon dioxide)

IT Epoxidation **catalysts**
(supported; epoxidn. process using supported silver **catalysts** treated with carbon dioxide)

IT 75-00-3, Ethyl chloride 298-14-6, Potassium bicarbonate 584-08-7, Potassium carbonate 1311-93-9 7440-22-4, Silver, uses 7757-79-1, Potassium nitrate, uses 7758-09-0, Potassium nitrite 20667-12-3, Silver (I) oxide 37349-36-3, Potassium tungstate
RL: **CAT (Catalyst use)**; USES (Uses)
(epoxidn. process using supported silver **catalysts** treated with carbon dioxide)

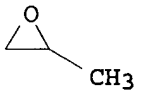
IT **75-56-9P**, Propylene oxide, preparation
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(epoxidn. process using supported silver **catalysts** treated with carbon dioxide)

IT 124-38-9, Carbon dioxide, uses
RL: NUU (Other use, unclassified); USES (Uses)
(epoxidn. process using supported silver **catalysts** treated with carbon dioxide)

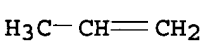
IT **115-07-1**, Propylene, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(epoxidn. process using supported silver **catalysts** treated with carbon dioxide)

IT **75-56-9P**, Propylene oxide, preparation

RL: IMF (Industrial manufacture); **PREP (Preparation)**
(epoxidn. process using supported silver **catalysts** treated with carbon dioxide)
RN 75-56-9 HCAPLUS
CN Oxirane, 2-methyl- (CA INDEX NAME)



IT **115-07-1**, Propylene, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(epoxidn. process using supported silver **catalysts** treated with carbon dioxide)
RN 115-07-1 HCAPLUS
CN 1-Propene (9CI) (CA INDEX NAME)



RE.CNT 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L31 ANSWER 24 OF 53 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1998:789137 HCAPLUS
DN 130:25444
TI Preparation of propylene oxide by direct epoxidation of propylene using alkaline earth metal compound-supported silver **catalysts** containing tungsten and potassium promoters
IN Kahn, Andrew P.; Gaffney, Anne M.
PA Arco Chemical Technology, L.P., USA; Arco Chemie Technologie Nederland B.V.
SO PCT Int. Appl., 28 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI WO 9852931 | A1 | 19981126 | WO 1998-EP2422 | 19980423 |
| W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM | | | | |
| RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG | | | | |
| US 5861519 | A | 19990119 | US 1997-862457 | 19970523 |
| CA 2287078 | A1 | 19981126 | CA 1998-2287078 | 19980423 |
| AU 9874317 | A | 19981211 | AU 1998-74317 | 19980423 |
| EP 983253 | A1 | 20000308 | EP 1998-921485 | 19980423 |
| EP 983253 | B1 | 20020731 | | |
| R: BE, DE, ES, FR, GB, IT, NL, SE | | | | |
| BR 9809129 | A | 20000801 | BR 1998-9129 | 19980423 |
| JP 2001527563 | T | 20011225 | JP 1998-549856 | 19980423 |
| ES 2181218 | T3 | 20030216 | ES 1998-921485 | 19980423 |

| | | | | | |
|---|---|---|---|---|---|
| | CN 1102929 | B | 20030312 | CN 1998-805334 | 19980423 |
| | MX 9910772 | A | 20000430 | MX 1999-10772 | 19991122 |
| PRAI | US 1997-862457 | A | 19970523 | | |
| | WO 1998-EP2422 | W | 19980423 | | |

AB The tungsten promoter and the potassium promoter are simultaneously introduced through the use of potassium tungstate. The **catalysts** exhibit unusually high propylene oxide productivity when CO2 is present in the feedstream.

IC ICM C07D301-10
ICS B01J023-68

CC 35-2 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 27

ST potassium tungsten promoter silver epoxidn **catalyst**; propylene silver epoxidn **catalyst**; carbon dioxide **feedstream** **propylene** oxide productivity

IT Epoxidation **catalysts**
(preparation of propylene oxide by direct epoxidn. of propylene using supported silver **catalysts** containing tungsten and potassium promoters)

IT Alkaline earth compounds
RL: **CAT (Catalyst use)**; USES (Uses)
(preparation of propylene oxide by direct epoxidn. of propylene using supported silver **catalysts** containing tungsten and potassium promoters)

IT 298-14-6, Potassium bicarbonate 584-08-7, Potassium carbonate 7757-79-1, Potassium nitrate, uses 7758-09-0, Potassium nitrite 11120-01-7, Sodium tungstate 11120-25-5, Ammonium paratungstate
RL: **CAT (Catalyst use)**; USES (Uses)
(**catalyst** promoter; preparation of propylene oxide by direct epoxidn. of propylene using supported silver **catalysts** containing tungsten and potassium promoters)

IT 471-34-1, Calcium carbonate, uses 12049-50-2, Calcium titanate
RL: **CAT (Catalyst use)**; USES (Uses)
(**catalyst** support; preparation of propylene oxide by direct epoxidn. of propylene using supported silver **catalysts** containing tungsten and potassium promoters)

IT 124-38-9, Carbon dioxide, uses
RL: NUU (Other use, unclassified); USES (Uses)
(preparation of propylene oxide by direct epoxidn. of propylene using supported silver **catalysts** and CO2 feedstream)

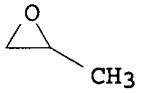
IT 7440-22-4, Silver, uses 37349-36-3, Potassium tungstate
RL: **CAT (Catalyst use)**; USES (Uses)
(preparation of propylene oxide by direct epoxidn. of propylene using supported silver **catalysts** containing tungsten and potassium promoters)

IT **75-56-9P**, Propylene oxide, preparation
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(preparation of propylene oxide by direct epoxidn. of propylene using supported silver **catalysts** containing tungsten and potassium promoters)

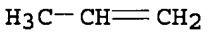
IT **115-07-1**, Propylene, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(preparation of propylene oxide by direct epoxidn. of propylene using supported silver **catalysts** containing tungsten and potassium promoters)

IT **75-56-9P**, Propylene oxide, preparation
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(preparation of propylene oxide by direct epoxidn. of propylene using supported silver **catalysts** containing tungsten and potassium promoters)

RN 75-56-9 HCAPLUS
CN Oxirane, 2-methyl- (CA INDEX NAME)



IT **115-07-1**, Propylene, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(preparation of propylene oxide by direct epoxidn. of propylene using supported silver **catalysts** containing tungsten and potassium promoters)
RN 115-07-1 HCAPLUS
CN 1-Propene (9CI) (CA INDEX NAME)



RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L31 ANSWER 25 OF 53 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1998:604733 HCAPLUS
DN 129:204425
TI Process and the effect of inert solvent use in the production of diisopropyl ether and isopropanol from propylene-rich feeds
IN Brown, Stephen H.; Trewella, Jeffrey C.
PA Mobil Oil Corporation, USA
SO U.S., 7 pp.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI US 5808161 | A | 19980915 | US 1995-567389 | 19951204 |
| PRAI US 1995-567389 | | 19951204 | | |

AB Inert solvents (e.g., p-dioxane, 1,3-dioxane, di-Me ether, THF, etc.) are employed in a liquid-phase process for the production of octane-boosting iso-Pr alc. and diisopropyl ether from a **propylene**-rich **feedstream** and water using acidic zeolite **catalyst** particles. When the inert solvent is used, **oxygenate** production is enhanced and **catalyst** productivity is substantially increased.
IC ICM C07C041-00
ICS C07C029-00
INCL 568694000
CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
Section cross-reference(s): 23, 48, 51
ST isopropyl ether manuf propylene conversion; inert solvent usage isopropyl ether manuf; solvent effect isopropyl ether manuf
IT Alkenes, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(C4+; solvent effect in the manufacture of secondary C4+ alcs. from)
IT Cation exchangers
(acidic; **catalysts** in the production of diisopropyl ether and isopropanol from propylene-rich feeds and the effect of inert solvents on increasing **oxygenate** production)

IT Beta zeolites
Zeolite MCM-22
Zeolite ZSM-35
RL: **CAT (Catalyst use)**; USES (Uses)
(**catalysts** in the production of diisopropyl ether and isopropanol from propylene-rich feeds and the effect of inert solvents on increasing **oxygenate** production)

IT Solvent effect
(in the production of diisopropyl ether and isopropanol from propylene-rich feeds)

IT Alcohols, preparation
RL: IMF (Industrial manufacture); PREP (Preparation)
(secondary, C4+; solvent effect in the manufacture of)

IT 1314-23-4, Zirconium oxide, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(on the effect of inert solvent use in the production of diisopropyl ether and isopropanol from propylene-rich feeds)

IT **67-63-0P**, Isopropyl alcohol, preparation 108-20-3P, Diisopropyl ether
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(process and inert solvent use in the production of diisopropyl ether and isopropanol from propylene-rich feeds)

IT **115-07-1**, Propylene, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(process and inert solvent use in the production of diisopropyl ether and isopropanol from propylene-rich feeds)

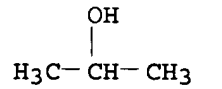
IT 123-91-1, p-Dioxane, uses 505-22-6, 1,3-Dioxane
RL: MOA (Modifier or additive use); NUU (Other use, unclassified); USES (Uses)
(solvent; on the effect of inert solvent use in the production of diisopropyl ether and isopropanol from propylene-rich feeds)

IT 109-99-9, Thf, uses 115-10-6, Dimethyl ether 126-33-0, Sulfolane
RL: NUU (Other use, unclassified); USES (Uses)
(solvent; on the effect of inert solvent use in the production of diisopropyl ether and isopropanol from propylene-rich feeds)

IT 107-21-1D, Ethylene glycol, dialkyl ethers
RL: NUU (Other use, unclassified); USES (Uses)
(solvents; on the effect of inert solvent use in the production of diisopropyl ether and isopropanol from propylene-rich feeds)

IT **67-63-0P**, Isopropyl alcohol, preparation
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(process and inert solvent use in the production of diisopropyl ether and isopropanol from propylene-rich feeds)

RN 67-63-0 HCAPLUS
CN 2-Propanol (9CI) (CA INDEX NAME)



IT **115-07-1**, Propylene, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(process and inert solvent use in the production of diisopropyl ether and isopropanol from propylene-rich feeds)

RN 115-07-1 HCAPLUS
CN 1-Propene (9CI) (CA INDEX NAME)

$H_3C-CH=CH_2$

RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

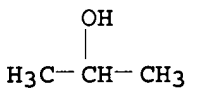
L31 ANSWER 26 OF 53 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1998:300629 HCAPLUS
DN 128:323134
TI Process for producing diisopropyl ether from propane
IN Marker, Terry L.; Muldoon, Brian S.; Glover, Bryan K.; Vora, Bipin V.
PA UOP Inc., USA
SO U.S., 9 pp.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI US 5750800 | A | 19980512 | US 1995-556117 | 19951109 |
| PRAI US 1995-556117 | | 19951109 | | |

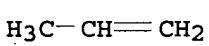
AB In the title process, in a first reaction zone propane in a feedstock, after any hydrocarbons containing four or more carbon atoms are removed via fractionation, is catalytically dehydrogenated to form propylene. After removing the hydrogen, the propane and propylene mixture generated in the first reaction zone is separated into a propane-enriched **stream** and a **propylene**-enriched **stream** containing ≥65 mass% **propylene**. The propane-enriched stream is recycled to the feedstock fractionation unit, and the **propylene** of the **propylene**-enriched **stream** is reacted with water in a second reaction zone in the presence of an acidic **catalyst** to form iso-Pr alc. which is concurrently reacted with propylene to produce diisopropyl ether. A portion of the second reaction zone effluent is recycled to the second reaction zone, and the remainder may be collected or further separated to provide a high-purity diisopropyl ether product. Process flow diagrams are presented.

IC ICM C07C041-00
INCL 568678000
CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
Section cross-reference(s): 23, 48, 51
ST isopropyl ether manuf propane conversion; dehydrogenation propane manuf isopropyl ether; hydration propene manuf isopropyl ether; isopropanol etherification manuf isopropyl ether
IT Dehydrogenation
Distillation
Etherification
Hydration, chemical
(process for producing diisopropyl ether from propane via)
IT 1333-74-0P, Hydrogen, preparation
RL: BYP (Byproduct); REM (Removal or disposal); PREP (Preparation); PROC (Process)
(process for producing diisopropyl ether from propane)
IT 108-20-3P, Diisopropyl ether
RL: IMF (Industrial manufacture); PREP (Preparation)
(process for producing diisopropyl ether from propane)
IT **67-63-0P**, 2-Propanol, preparation **115-07-1P**, Propene, preparation
RL: IMF (Industrial manufacture); RCT (Reactant); **PREP (Preparation); RACT (Reactant or reagent)**
(process for producing diisopropyl ether from propane)

IT 74-98-6, Propane, reactions 7732-18-5, Water, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(process for producing diisopropyl ether from propane)
IT **67-63-0P**, 2-Propanol, preparation **115-07-1P**, Propene, preparation
RL: IMF (Industrial manufacture); RCT (Reactant); **PREP (Preparation)**; **RACT (Reactant or reagent)**
(process for producing diisopropyl ether from propane)
RN 67-63-0 HCAPLUS
CN 2-Propanol (9CI) (CA INDEX NAME)



RN 115-07-1 HCAPLUS
CN 1-Propene (9CI) (CA INDEX NAME)



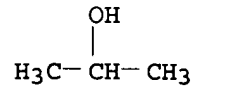
RE.CNT 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L31 ANSWER 27 OF 53 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1998:263259 HCAPLUS
DN 128:309690
TI Two-stage process for producing diisopropyl ether using catalytic distillation
IN Marker, Terry L.; Funk, Gregory A.; Barger, Paul T.; Hammershaimb, Harold U.
PA UOP Inc., USA
SO U.S., 6 pp., Cont.-in-part of U.S. 5,504,258.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 2

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI US 5744645 | A | 19980428 | US 1996-625859 | 19960401 |
| US 5504258 | A | 19960402 | US 1994-311993 | 19940926 |
| PRAI US 1994-311993 | A2 | 19940926 | | |

AB A process for the efficient production of diisopropyl ether, where catalytic distillation is used to increase the yield of product beyond thermodn. equilibrium limitations, is described. In a hydration zone, propylene is reacted with water in the presence of a **catalyst** (e.g., acidic cation exchangers or zeolites) to effect hydration to produce an effluent **stream** containing water, unreacted **propylene**, and iso-Pr alc., and then, in an etherification zone, a portion of the effluent stream is further reacted by catalytic distillation in the presence of a **catalyst** (e.g., acidic cation exchangers or zeolites) to effect reaction of propylene and iso-Pr alc. to form diisopropyl ether while concurrently separating an organic portion containing the diisopropyl ether and an aqueous portion, and collecting the organic portion containing the diisopropyl ether. A

process flow diagram is presented.
IC ICM C07C041-00
INCL 565695000
CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
Section cross-reference(s): 23, 48
ST isopropyl ether manuf two step; etherification prepn isopropyl ether; propylene hydration isopropyl ether manuf; catalytic distn isopropyl ether manuf
IT Etherification
(a two-stage process for producing diisopropyl ether using catalytic distillation)
IT Cation exchangers
(acidic; **catalysts** in a two-stage process for producing diisopropyl ether using catalytic distillation)
IT Zeolites (synthetic), uses
RL: **CAT (Catalyst use)**; USES (Uses)
(acidic; **catalysts** in a two-stage process for producing diisopropyl ether using catalytic distillation)
IT Distillation
(catalytic; two-stage process for producing diisopropyl ether using)
IT 7732-18-5P, Water, preparation
RL: BYP (Byproduct); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(two-stage process for producing diisopropyl ether using catalytic distillation)
IT 108-20-3P, Diisopropyl ether
RL: IMF (Industrial manufacture); PREP (Preparation)
(two-stage process for producing diisopropyl ether using catalytic distillation)
IT **67-63-0P**, 2-Propanol, preparation
RL: IMF (Industrial manufacture); RCT (Reactant); **PREP (Preparation)**; RACT (Reactant or reagent)
(two-stage process for producing diisopropyl ether using catalytic distillation)
IT **115-07-1**, Propene, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(two-stage process for producing diisopropyl ether using catalytic distillation)
IT **67-63-0P**, 2-Propanol, preparation
RL: IMF (Industrial manufacture); RCT (Reactant); **PREP (Preparation)**; RACT (Reactant or reagent)
(two-stage process for producing diisopropyl ether using catalytic distillation)
RN 67-63-0 HCAPLUS
CN 2-Propanol (9CI) (CA INDEX NAME)



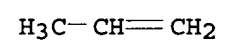
IT **115-07-1**, Propene, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(two-stage process for producing diisopropyl ether using catalytic distillation)
RN 115-07-1 HCAPLUS
CN 1-Propene (9CI) (CA INDEX NAME)

$H_3C-CH=CH_2$

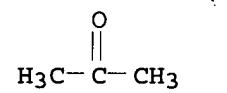
RE.CNT 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L31 ANSWER 28 OF 53 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1998:255314 HCAPLUS
DN 129:4363
TI Formation of oxygenates in the propane oxidation over K+ modified Fe/SiO2 **catalyst**
AU Teng, Yonghong; Kobayashi, Tetsuhiko
CS Osaka National Research Institute, AIST, MITI, Osaka, 563, Japan
SO Chemistry Letters (1998), (4), 327-328
CODEN: CMLTAG; ISSN: 0366-7022
PB Chemical Society of Japan
DT Journal
LA English
AB Oxygenates are formed in the propane oxidation over silica **catalysts** supporting a very small amount of Fe. Alkali addition to the **catalysts** can enhance the activity as well as the selectivity to acrolein and acetone.
CC 22-7 (Physical Organic Chemistry)
Section cross-reference(s): 67
ST oxygenate formation propane oxidn; potassium modified iron silica **catalyst** autoxidn; propane oxidn potassium iron silica **catalyst**
IT Autoxidation
Autoxidation **catalysts**
Oxidation
Oxidation **catalysts**
Surface area
(formation of oxygenates in propane oxidation over K+ modified Fe/SiO2 **catalyst**)
IT 1309-37-1, Iron oxide, uses 7439-89-6, Iron, uses 7439-96-5, Manganese, uses 7439-98-7, Molybdenum, uses 7440-09-7, Potassium, uses 7440-47-3, Chromium, uses 7440-48-4, Cobalt, uses 7440-50-8, Copper, uses 7440-55-3, Gallium, uses 7440-62-2, Vanadium, uses 7440-74-6, Indium, uses 24203-36-9, Potassium cation, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(formation of oxygenates in propane oxidation over K+ modified Fe/SiO2 **catalyst**)
IT 7631-86-9, Silica, properties
RL: **CAT (Catalyst use)**; PRP (Properties); USES (Uses)
(formation of oxygenates in propane oxidation over K+ modified Fe/SiO2 **catalyst**)
IT 74-98-6, Propane, reactions **115-07-1**, Propene, reactions
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); **RACT (Reactant or reagent)**
(formation of **oxygenates** in propane oxidation over K+ modified Fe/SiO2 **catalyst**)
IT 50-00-0P, Formaldehyde, preparation **67-64-1P**, Acetone, preparation 75-07-0P, Acetaldehyde, preparation 78-94-4P, 3-Buten-2-one, preparation **107-02-8P**, Acrolein, preparation 1191-99-7P, 2,3-Dihydrofuran
RL: SPN (Synthetic preparation); **PREP (Preparation)**
(formation of oxygenates in propane oxidation over K+ modified Fe/SiO2 **catalyst**)
IT **115-07-1**, Propene, reactions
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC

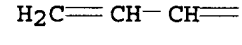
(Process); **RACT (Reactant or reagent)**
(formation of **oxygenates** in propane oxidation over K+ modified Fe/SiO2 **catalyst**)
RN 115-07-1 HCAPLUS
CN 1-Propene (9CI) (CA INDEX NAME)



IT **67-64-1P**, Acetone, preparation **107-02-8P**, Acrolein, preparation
RL: SPN (Synthetic preparation); **PREP (Preparation)**
(formation of oxygenates in propane oxidation over K+ modified Fe/SiO2 **catalyst**)
RN 67-64-1 HCAPLUS
CN 2-Propanone (CA INDEX NAME)



RN 107-02-8 HCAPLUS
CN 2-Propenal (9CI) (CA INDEX NAME)



RE.CNT 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L31 ANSWER 29 OF 53 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1998:1467 HCAPLUS
DN 128:49817
TI Removing molybdenum epoxidation **catalyst** from process stream
IN Albal, Rajendra; Evans, Thomas; Wentzheimer, Wayne; Donn, Allen; Gelb, Morris
PA Arco Chemical Technology, L.P., USA; Arco Chemie Technologie Nederland B.V.
SO PCT Int. Appl., 16 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI WO 9746545 | A1 | 19971211 | WO 1997-EP2844 | 19970601 |
| W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, UZ, VN, YU | | | | |
| RW: GH, KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG | | | | |
| US 5731446 | A | 19980324 | US 1996-658677 | 19960604 |
| CA 2256447 | A1 | 19971211 | CA 1997-2256447 | 19970601 |
| CA 2256447 | C | 20060815 | | |

| | | | | | |
|---|---|---|---|---|---|
| | AU 9730316 | A | 19980105 | AU 1997-30316 | 19970601 |
| | EP 918763 | A1 | 19990602 | EP 1997-925033 | 19970601 |
| | EP 918763 | B1 | 20021016 | | |
| | R: BE, DE, ES, FR, GB, IT, NL | | | | |
| | CN 1221411 | A | 19990630 | CN 1997-195232 | 19970601 |
| | CN 1097585 | B | 20030101 | | |
| | BR 9709426 | A | 19990810 | BR 1997-9426 | 19970601 |
| | JP 2001501589 | T | 20010206 | JP 1998-500212 | 19970601 |
| | ES 2185940 | T3 | 20030501 | ES 1997-925033 | 19970601 |
| | KR 2000016464 | A | 20000325 | KR 1998-710048 | 19981204 |
| PRAI | US 1996-658677 | A | 19960604 | | |
| | WO 1997-EP2844 | W | 19970601 | | |

AB An aqueous epoxidn. process stream, such as a blowdown process **stream** from a **propylene** oxide-styrene co-production process, containing molybdenum, sodium, and orgs. is incinerated to remove organic residues and to obtain an aqueous solution containing molybdenum and sodium, cooled, acidified, and contacted with activated carbon to obtain an aqueous stream containing reduced amount of molybdenum; further molybdenum reduction can be achieved by treatment with basic ion exchange resin.

IC ICM C07D301-32
ICS B01J031-40

CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
Section cross-reference(s): 25, 27

ST molybdenum removal epoxidn process stream; propylene epoxidn molybdenum **catalyst** removal

IT Ion exchangers
(basic; removing molybdenum epoxidn. **catalyst** from process stream)

IT Epoxidation
Epoxidation **catalysts**
(removing molybdenum epoxidn. **catalyst** from process stream)

IT 7631-95-0, Sodium molybdate
RL: **CAT (Catalyst use)**; USES (Uses)
(removing molybdenum epoxidn. **catalyst** from process stream)

IT **75-56-9P**, Propylene oxide, preparation
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(removing molybdenum epoxidn. **catalyst** from process stream)

IT 7440-44-0, Calgon F 400, uses 7647-01-0, Hydrogen chloride, uses 7664-93-9, Sulfuric acid, uses
RL: NUU (Other use, unclassified); USES (Uses)
(removing molybdenum epoxidn. **catalyst** from process stream)

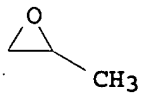
IT 7439-98-7P, Molybdenum, preparation
RL: PUR (Purification or recovery); PREP (Preparation)
(removing molybdenum epoxidn. **catalyst** from process stream)

IT **115-07-1**, Propylene, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(removing molybdenum epoxidn. **catalyst** from process stream)

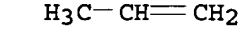
IT **75-56-9P**, Propylene oxide, preparation
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(removing molybdenum epoxidn. **catalyst** from process stream)

RN 75-56-9 HCAPLUS

CN Oxirane, 2-methyl- (CA INDEX NAME)



IT **115-07-1**, Propylene, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(removing molybdenum epoxidn. **catalyst** from process stream)
RN 115-07-1 HCAPLUS
CN 1-Propene (9CI) (CA INDEX NAME)



L31 ANSWER 30 OF 53 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1997:262287 HCAPLUS
DN 126:240289
TI Method and apparatus for direct injection of oxygen and a gaseous reactant stream into a fluidized-bed reactor
IN Wagner, Matthew Lincoln; Bergman, Thomas John, Jr.
PA Praxair Technology, Inc., USA
SO Eur. Pat. Appl., 8 pp.
CODEN: EPXXDW
DT Patent
LA English
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | EP 761299 | A2 | 19970312 | EP 1996-113566 | 19960823 |
| | EP 761299 | A3 | 19970611 | | |
| | R: DE, ES, FR, IT | | | | |
| | US 5801265 | A | 19980901 | US 1995-519011 | 19950824 |
| | CA 2184020 | A1 | 19970225 | CA 1996-2184020 | 19960823 |
| | CA 2184020 | C | 20020115 | | |
| | CN 1150135 | A | 19970521 | CN 1996-119942 | 19960823 |
| | CN 1059358 | B | 20001213 | | |
| | BR 9603543 | A | 19980512 | BR 1996-3543 | 19960823 |
| | US 6156921 | A | 20001205 | US 1998-37980 | 19980309 |
| PRAI | US 1995-519011 | A | 19950824 | | |

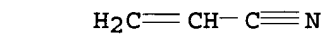
AB The apparatus comprises a sparger causes an entraining of the oxygen-bearing gas into the reactant gas stream, a feed line couples the sparger to the fluidized-bed for entraining the oxygen-bearing gas directly into contact with the fluidized bed, a controller controls both the amount of oxygen-bearing gas and the gaseous reactant and maintains the oxygen level for the the fluidized-bed **catalyst.** The reactant content of the combined feed and oxygen stream is maintained above an upper flammability limit, preferably >25% over the margin. The system enables the production of acrylonitriles from a feed **stream** comprising ammonia, **propylene** and oxygen.
IC ICM B01J008-24
ICS B01J019-00; C07C253-26; B01F005-04
CC 48-4 (Unit Operations and Processes)
ST oxygen gas stream injection app; fluidized bed reactor stream injection app; acrylonitrile manuf fluidized bed reactor
IT Reactors
(fluidized-bed; method and apparatus for direct injection of oxygen and a gaseous reactant stream into a fluidized bed reactor)
IT Fluidized beds
(reactors; method and apparatus for direct injection of oxygen and a gaseous reactant stream into a fluidized bed reactor)
IT **107-13-1P**, Acrylonitrile, preparation
RL: IMF (Industrial manufacture); **PREP (Preparation)**

(method and apparatus for direct injection of oxygen and a gaseous reactant stream into a fluidized bed reactor)

IT **115-07-1**, Propylene, reactions 7664-41-7, Ammonia, reactions 7782-44-7, Oxygen, reactions
RL: RCT (Reactant); TEM (Technical or engineered material use); **RACT (Reactant or reagent)**; USES (Uses)
(method and apparatus for direct injection of oxygen and a gaseous reactant stream into a fluidized bed reactor)

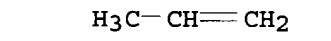
IT **107-13-1P**, Acrylonitrile, preparation
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(method and apparatus for direct injection of oxygen and a gaseous reactant stream into a fluidized bed reactor)

RN 107-13-1 HCAPLUS
CN 2-Propenenitrile (9CI) (CA INDEX NAME)



IT **115-07-1**, Propylene, reactions
RL: RCT (Reactant); TEM (Technical or engineered material use); **RACT (Reactant or reagent)**; USES (Uses)
(method and apparatus for direct injection of oxygen and a gaseous reactant stream into a fluidized bed reactor)

RN 115-07-1 HCAPLUS
CN 1-Propene (9CI) (CA INDEX NAME)



L31 ANSWER 31 OF 53 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1997:124919 HCAPLUS
DN 126:212527
TI Process for producing **propylene** oxide from a **feedstream** comprising hydrogen and a carbon oxide
IN Vora, Bipin V.; Pujado, Peter R.
PA UOP Inc., USA
SO U.S., 11 pp.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI US 5599955 | A | 19970204 | US 1996-605602 | 19960222 |
| PRAI US 1996-605602 | | 19960222 | | |

AB In the process, propylene oxide is produced from an alternate feedstream comprising hydrogen and a carbon oxide. A portion of the feedstream is passed to an **oxygenate** production zone to produce an **oxygenate** stream comprising methanol and di-Me ether, and the **oxygenate** stream is passed to an olefin production zone containing a metal aluminophosphate **catalyst** to produce a **propylene stream.** The **propylene stream** is epoxidized with hydrogen peroxide which has been produced from hydrogen separated from a portion of the feedstream. The spent water stream produced by the epoxidn. reaction is treated to remove heavy components and returned to the hydrogen peroxide production zone. The return of the unreacted propylene from the epoxidn. reaction zone for its subsequent recovery and recycle

permits a less complicated, lower energy propylene separation The recycling of spent water from the epoxidn. reaction zone and the removal of heavy compds. eliminates a low value water stream and the recovery of heavy hydrocarbons therefrom produces a valuable secondary product.

IC ICM C07D301-14
ICS C07D301-16

INCL 549525000

CC 35-2 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 27

ST propylene oxide prepn hydrogen carbon monooxide; epoxidn propylene hydrogen carbon oxide

IT Silicoaluminophosphate zeolites
RL: **CAT (Catalyst use)**; USES (Uses)
(SAPO-17, SAPO-34, SAPO-18; producing **propylene** oxide from **feedstream** comprising hydrogen and carbon oxide)

IT Aluminophosphates
RL: **CAT (Catalyst use)**; USES (Uses)
(metal; producing **propylene** oxide from **feedstream** comprising hydrogen and carbon oxide)

IT Epoxidation
(producing **propylene** oxide from **feedstream** comprising hydrogen and carbon oxide)

IT Synthesis gas
RL: RCT (Reactant); RACT (Reactant or reagent)
(producing **propylene** oxide from **feedstream** comprising hydrogen and carbon oxide)

IT 42613-21-8, Titanium silicate
RL: **CAT (Catalyst use)**; USES (Uses)
(producing **propylene** oxide from **feedstream** comprising hydrogen and carbon oxide)

IT **75-56-9P**, preparation
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(producing **propylene** oxide from **feedstream** comprising hydrogen and carbon oxide)

IT **115-07-1P**, 1-Propene, preparation 7722-84-1P, Hydrogen peroxide, preparation
RL: PNU (Preparation, unclassified); RCT (Reactant); PREP (Preparation); **RACT (Reactant or reagent)**
(producing **propylene** oxide from **feedstream** comprising hydrogen and carbon oxide)

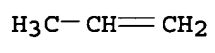
IT 124-38-9, Carbon dioxide, reactions 630-08-0, Carbon monoxide, reactions 1333-74-0, Hydrogen, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(producing **propylene** oxide from **feedstream** comprising hydrogen and carbon oxide)

IT **75-56-9P**, preparation
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(producing **propylene** oxide from **feedstream** comprising hydrogen and carbon oxide)

RN 75-56-9 HCAPLUS
CN Oxirane, 2-methyl- (CA INDEX NAME)

IT **115-07-1P**, 1-Propene, preparation
RL: PNU (Preparation, unclassified); RCT (Reactant); PREP (Preparation);

**RACT (Reactant or reagent)**
(producing **propylene** oxide from **feedstream** comprising hydrogen and carbon oxide)
RN 115-07-1 HCAPLUS
CN 1-Propene (9CI) (CA INDEX NAME)



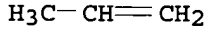
L31 ANSWER 32 OF 53 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1997:113849 HCAPLUS
DN 126:186513
TI Integrated process for the production of propylene oxide from hydrogen- and **propylene**-rich hydrocarbon **stream**
IN Pujado, Peter R.; Hammerman, John I.
PA UOP Inc., USA
SO U.S., 6 pp.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI US 5599956 | A | 19970204 | US 1996-606108 | 19960222 |
| PRAI US 1996-606108 | | 19960222 | | |

AB Propylene oxide is produced by an integrated process utilizing as a basic feedstock a refinery stream containing saturated hydrocarbons. The first element of the process converts one or more of the saturated hydrocarbons to a **stream** containing **propylene** and hydrogen using steam cracking, catalytic cracking, or preferably catalytic dehydrogenation. Hydrogen and propylene are separated, and the hydrogen is employed in a reaction cycle affording hydrogen peroxide. The latter is then used to epoxidize propylene in the presence of a suitable **catalyst**, especially a titanosilicate.
IC ICM C07D301-12
ICS C07D303-04
INCL 549531000
CC 35-2 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 51
ST propylene oxide manuf satd hydrocarbon feedstock; hydrogen peroxide epoxidn propylene methyloxirane manuf
IT Epoxidation
(integrated process for the production of propylene oxide from hydrogen- and **propylene**-rich hydrocarbon **stream**)
IT Epoxidation **catalysts**
(integrated process for the production of propylene oxide from hydrogen- and **propylene**-rich hydrocarbon **stream** in presence of)
IT Silicates, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(titanosilicates, **catalyst**; integrated process for the production of propylene oxide from hydrogen- and **propylene**-rich hydrocarbon **stream** in presence of)
IT 13463-67-7, Titania, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(catalytic support; integrated process for the production of propylene oxide from hydrogen- and **propylene**-rich hydrocarbon

**stream** in presence of)
IT **75-56-9P**, preparation
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(integrated process for the production of propylene oxide from hydrogen- and **propylene**-rich hydrocarbon **stream**)
IT **115-07-1**, 1-Propene, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(integrated process for the production of propylene oxide from hydrogen- and **propylene**-rich hydrocarbon **stream**)
IT 7722-84-1P, Hydrogen peroxide, preparation
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(integrated process for the production of propylene oxide from hydrogen- and **propylene**-rich hydrocarbon **stream** employing hydrogen peroxide formed in the process)
IT 1333-74-0, Hydrogen, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(integrated process for the production of propylene oxide from hydrogen- and **propylene**-rich hydrocarbon **stream** in presence of)
IT **75-56-9P**, preparation
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(integrated process for the production of propylene oxide from hydrogen- and **propylene**-rich hydrocarbon **stream**)
RN 75-56-9 HCAPLUS
CN Oxirane, 2-methyl- (CA INDEX NAME)

IT **115-07-1**, 1-Propene, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(integrated process for the production of propylene oxide from hydrogen- and **propylene**-rich hydrocarbon **stream**)
RN 115-07-1 HCAPLUS
CN 1-Propene (9CI) (CA INDEX NAME)



L31 ANSWER 33 OF 53 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1996:705800 HCAPLUS
DN 125:332259
TI Process for producing diisopropyl ether
IN Marker, Terry L.
PA UOP Inc., USA
SO Can. Pat. Appl., 21 pp.
CODEN: CPXXEB
DT Patent
LA English
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI CA 2145050 | A1 | 19960921 | CA 1995-2145050 | 19950320 |
| PRAI CA 1995-2145050 | | 19950320 | | |

AB A **propylene**-containing **stream** is contacted with iso-PrOH in a first stage in the presence of a **catalyst** under conditions to produce an effluent stream comprising iso-Pr2O, useful as an octane-enhancing additive for gasoline. At least a portion of this effluent stream is recycled to a second stage where the iso-Pr2O reacts with water to produce iso-PrOH. The iso-PrOH is then recycled to the first stage. Producing iso-PrOH by the hydration of iso-Pr2O is an easier reaction than, for example, hydration of propylene.

IC ICM C07C043-04
ICS C07C041-06

CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
Section cross-reference(s): 51

ST isopropyl ether manuf hydrolysis

IT Gasoline additives
(antiknock, process for producing diisopropyl ether)

IT **67-63-0P**, 2-Propanol, preparation
RL: BYP (Byproduct); RCT (Reactant); **PREP (Preparation)**; RACT (Reactant or reagent)
(process for producing diisopropyl ether)

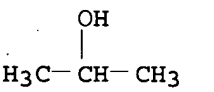
IT 108-20-3P
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(process for producing diisopropyl ether)

IT **115-07-1**, 1-Propene, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(process for producing diisopropyl ether)

IT **67-63-0P**, 2-Propanol, preparation
RL: BYP (Byproduct); RCT (Reactant); **PREP (Preparation)**; RACT (Reactant or reagent)
(process for producing diisopropyl ether)

RN 67-63-0 HCAPLUS

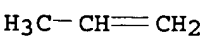
CN 2-Propanol (9CI) (CA INDEX NAME)



IT **115-07-1**, 1-Propene, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(process for producing diisopropyl ether)

RN 115-07-1 HCAPLUS

CN 1-Propene (9CI) (CA INDEX NAME)



L31 ANSWER 34 OF 53 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 1996:672968 HCAPLUS

DN 125:328095

TI Multistage indirect propylene hydration process and **catalyst** for the production of diisopropyl ether and isopropanol

IN Bell, Weldon K.; Brown, Stephen H.; Trewella, Jeffrey C.

PA Mobil Oil Corp., USA

SO U.S., 12 pp., Cont.-in-part of U.S. Ser. No. 347,933, abandoned.
CODEN: USXXAM

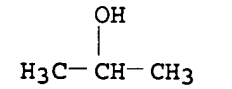
DT Patent

LA English
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | US 5569789 | A | 19961029 | US 1995-510371 | 19950802 |
| PRAI | US 1994-347933 | B2 | 19941201 | | |

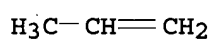
AB A multistaged fixed **catalyst** bed process for the production of diisopropyl ether and isopropanol is disclosed comprising a fixed bed of serially connected stages containing zeolite Beta **catalyst.** A **feedstream** of **propylene** and a water equivalent (selected from the group of water, isopropanol and diisopropyl ether) is introduced into each stage at a rate sufficient to provide a mole ratio of water equivalent to propylene equivalent that increases in increments by stage from ≥0.1 in a first stage to ≤1.2 in a final stage and the feedstream is introduced at 50-450°/700-24,000 kPa, and a weight-hourly space velocity of 0.10-30, based on **catalyst**, whereby a single non-aqueous liquid phase is maintained in the fixed bed. An effluent product stream is recovered comprising diisopropyl ether, isopropanol, and water from the final stage. Isopropanol is recycled to the first stage when the preferred product is diisopropyl ether. When the preferred product is isopropanol, diisopropyl ether and water are recycled to the first stage.

IC ICM C07C029-00
ICS C07C031-10; C07C041-06; C07C043-04
INCL 568697000
CC 23-9 (Aliphatic Compounds)
Section cross-reference(s): 45, 48, 67
ST isopropyl ether prepn; isopropanol prepn propylene hydration; zeolite **catalyst** prepn isopropyl ether
IT Etherification
(of propylene in prepn of diisopropyl ether)
IT Etherification **catalysts**
(zeolite-β for conversion of propylene in prepn of diisopropyl ether)
IT Zeolites, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(beta, **catalyst** for the production of diisopropyl ether and isopropanol from propylene and water)
IT **67-63-0P**, 2-Propanol, preparation 108-20-3P, Diisopropyl ether
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(multistage indirect propylene hydration process and **catalyst** for the production of diisopropyl ether and isopropanol)
IT **115-07-1**, Propylene, reactions 7732-18-5, Water, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(multistage indirect propylene hydration process and **catalyst** for the production of diisopropyl ether and isopropanol)
IT **67-63-0P**, 2-Propanol, preparation
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(multistage indirect propylene hydration process and **catalyst** for the production of diisopropyl ether and isopropanol)
RN 67-63-0 HCAPLUS
CN 2-Propanol (9CI) (CA INDEX NAME)



IT **115-07-1**, Propylene, reactions

RL: RCT (Reactant); **RACT (Reactant or reagent)**
(multistage indirect propylene hydration process and **catalyst** for the production of diisopropyl ether and isopropanol)
RN 115-07-1 HCAPLUS
CN 1-Propene (9CI) (CA INDEX NAME)

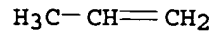


L31 ANSWER 35 OF 53 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1996:365869 HCAPLUS
DN 125:15023
TI Process for manufacturing ethylbenzene or cumene
IN Hendriksen, Dan Eldon; Lattner, James Richardson; Zboray, James Andrew; Soled, Stuart Leon
PA Exxon Chemical Patents Inc., USA
SO PCT Int. Appl., 24 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

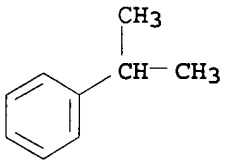
| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI WO 9611175 | A1 | 19960418 | WO 1995-US13100 | 19951006 |
| W: AU, CA, JP, SG | | | | |
| RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE | | | | |
| CA 2201783 | A1 | 19960418 | CA 1995-2201783 | 19951006 |
| AU 9538307 | A | 19960502 | AU 1995-38307 | 19951006 |
| AU 716613 | B2 | 20000302 | | |
| JP 10508300 | T | 19980818 | JP 1995-512705 | 19951006 |
| EP 873291 | A1 | 19981028 | EP 1995-936310 | 19951006 |
| EP 873291 | B1 | 20020116 | | |
| R: BE, DE, ES, FR, GB, IT, NL, SE | | | | |
| ES 2171200 | T3 | 20020901 | ES 1995-936310 | 19951006 |
| PRAI US 1994-319212 | A | 19941006 | | |
| WO 1995-US13100 | W | 19951006 | | |

AB The production of ethylbenzene from dilute ethylene and dilute and dilute benzene is accomplished in s steps. First, the benzene feedstock stream containing benzene is alkylated with the dilute ethylene feedstock stream, containing ethylene, to form ethylbenzene along with polyethylbenzenes (PEB) which includes a mixture of di- and triethylbenzenes that may also contain tetra-, penta-, and hexaethylbenzenes. Second, the product of the first step is distilled to remove the unreacted benzene and other unreacted material. Some of the ethylbenzene is recovered by distillation In a third step, the polyethylbenzenes are transalkylated with excess pure benzene to form product ethylbenzene. The product ethylbenzene may be recovered by distillation
This process utilizing dilute benzene feedstock may also be applied to the manufacture of cumene, rather than ethylbenzene, by using a dilute **propylene** feedstock **stream**, rather than a dilute ethylene feedstock stream. **Catalysts** used for the alkylation and transalkylation step are supported heteropoly acid **catalysts**, such as phosphotungstic acid on a silica support or Y zeolite **catalyst** in the acid form.
IC ICM C07C015-073
ICS C07C015-085
CC 51-11 (Fossil Fuels, Derivatives, and Related Products)

Section cross-reference(s): 45
ST ethylbenzene cumene manuf
IT Heteropoly acids
RL: **CAT (Catalyst use)**; USES (Uses)
(alkylation **catalysts**; process for manufacturing ethylbenzene or cumene by alkylation-distillation-transalkylation steps)
IT Gasoline
RL: BYP (Byproduct); PREP (Preparation)
(process for manufacturing ethylbenzene or cumene by alkylation-distillation-
transalkylation steps with)
IT Zeolites, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(HY, alkylation **catalysts**; process for manufacturing ethylbenzene or cumene by alkylation-distillation-transalkylation steps)
IT Zeolites, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(Y, LZY 84, alkylation **catalysts**; process for manufacturing ethylbenzene or cumene by alkylation-distillation-transalkylation steps)
IT 1343-93-7, Phosphotungstic acid
RL: **CAT (Catalyst use)**; USES (Uses)
(alkylation **catalysts**; process for manufacturing ethylbenzene or cumene by alkylation-distillation-transalkylation steps)
IT 71-43-2, Benzene, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(alkylation; process for manufacturing ethylbenzene or cumene by alkylation-distillation-transalkylation steps)
IT **115-07-1**, Propylene, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(benzene alkylation with; process for manufacturing cumene by alkylation-distillation-transalkylation steps)
IT 74-85-1, Ethylene, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(benzene alkylation with; process for manufacturing ethylbenzene by alkylation-distillation-transalkylation steps)
IT 100-41-4P, Ethylbenzene, preparation
RL: IMF (Industrial manufacture); PREP (Preparation)
(process for manufacturing cumene or)
IT **98-82-8P**, Cumene
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(process for manufacturing ethylbenzene or)
IT **115-07-1**, Propylene, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(benzene alkylation with; process for manufacturing cumene by alkylation-distillation-transalkylation steps)
RN 115-07-1 HCAPLUS
CN 1-Propene (9CI) (CA INDEX NAME)



IT **98-82-8P**, Cumene
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(process for manufacturing ethylbenzene or)
RN 98-82-8 HCAPLUS
CN Benzene, (1-methylethyl)- (9CI) (CA INDEX NAME)

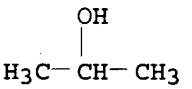


L31 ANSWER 36 OF 53 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1996:346174 HCAPLUS
DN 125:33169
TI Two-step process for producing diisopropyl ether using catalytic distillation
IN Marker, Terry L.; Funk, Gregory A.; Barger, Paul T.; Hammershaimb, Harold U.
PA UOP Inc., USA
SO U.S., 6 pp.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 2

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | US 5504258 | A | 19960402 | US 1994-311993 | 19940926 |
| | US 5744645 | A | 19980428 | US 1996-625859 | 19960401 |
| PRAI | US 1994-311993 | A2 | 19940926 | | |

OS CASREACT 125:33169
AB A process for the efficient production of diisopropyl ether, where catalytic distillation is used to increase the yield of product beyond thermodn. equilibrium limitations, is reported. In a hydration zone, propylene is reacted with water in the presence of a **catalyst** to effect hydration to produce an effluent **stream** containing water, unreacted **propylene**, and iso-Pr alc., and, in an etherification zone, a portion of the effluent is further reacted by catalytic distillation in the presence of a **catalyst** (e.g., acidic cation exchangers, etc.) to effect etherification of the propylene and iso-Pr alc. to form diisopropyl ether while concurrently separating a propylene-rich portion, a diisopropyl ether-rich portion and an aqueous portion, and recovering the diisopropyl ether from the diisopropyl ether-rich portion. A process flow diagram is presented.
IC ICM C07C041-00
INCL 565695000
CC 23-9 (Aliphatic Compounds)
Section cross-reference(s): 45, 48
ST isopropyl ether prepn; propylene hydration etherification isopropyl ether prepn; isopropanol etherification propylene isopropyl ether prepn
IT Cation exchangers
(**catalysts** for preparation of diisopropyl ether from propylene and isopropanol)
IT Zeolites, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(**catalysts** for preparation of diisopropyl ether from propylene and isopropanol)
IT **67-63-0P**, Isopropyl alcohol, preparation
RL: IMF (Industrial manufacture); RCT (Reactant); SPN (Synthetic preparation); **PREP (Preparation)**; RACT (Reactant or reagent)
(two-step process for producing diisopropyl ether using catalytic

distillation)
IT 108-20-3P, Diisopropyl ether
RL: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP (Preparation)
(two-step process for producing diisopropyl ether using catalytic distillation)
IT 111-96-6, Diethylene glycol dimethyl ether 126-33-0, Sulfolane
RL: NUU (Other use, unclassified); USES (Uses)
(two-step process for producing diisopropyl ether using catalytic distillation)
IT **115-07-1**, Propylene, reactions 7732-18-5, Water, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(two-step process for producing diisopropyl ether using catalytic distillation)
IT **67-63-0P**, Isopropyl alcohol, preparation
RL: IMF (Industrial manufacture); RCT (Reactant); SPN (Synthetic preparation); **PREP (Preparation)**; RACT (Reactant or reagent)
(two-step process for producing diisopropyl ether using catalytic distillation)
RN 67-63-0 HCAPLUS
CN 2-Propanol (9CI) (CA INDEX NAME)



IT **115-07-1**, Propylene, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(two-step process for producing diisopropyl ether using catalytic distillation)
RN 115-07-1 HCAPLUS
CN 1-Propene (9CI) (CA INDEX NAME)



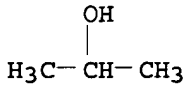
L31 ANSWER 37 OF 53 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1996:228959 HCAPLUS
DN 124:320117
TI Gas-phase process for manufacture of isopropanol by hydration of propylene
IN Brown, Stephen H.; Trewella, Jeffrey C.
PA Mobil Oil Corp., USA
SO U.S., 6 pp.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI US 5488186 | A | 19960130 | US 1995-408244 | 19950322 |
| PRAI US 1995-408244 | | 19950322 | | |

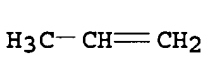
AB The title process with with high selectivity, high **catalyst** productivity and long **catalyst** life comprises contacting water and a **feedstream** comprising **propylene** in the gas phase with acidic medium-pore, shape-selective metallosilicate **catalyst** particles s at a water:propylene mole ratio of 0.05-0.499, where the

isopropanol is produced at a selectivity of at least 70% and **catalyst** productivity is at least 0.1 unit weight of **oxygenates** comprising isopropanol/unit weight of **catalyst** per h. Zeolite ZSM-5, ZSM-23, ZSM-35 and ferrierite are preferred **catalysts.**

IC ICM C07C029-04
ICS C07C031-10
INCL 568897000
CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
ST zeolite **catalyst** isopropanol manuf; propylene hydration isopropanol manuf; silicate **catalyst** isopropanol manuf
IT Hydration **catalysts**
(acidic medium pore, shape selective metallosilicates; gas-phase process for manufacture of isopropanol by hydration of propylene)
IT Silicates, uses
Zeolites, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(gas-phase process for manufacture of isopropanol by hydration of propylene)
IT Zeolites, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(ZSM 11, gas-phase process for manufacture of isopropanol by hydration of propylene)
IT Zeolites, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(ZSM 12, gas-phase process for manufacture of isopropanol by hydration of propylene)
IT Zeolites, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(ZSM 22, gas-phase process for manufacture of isopropanol by hydration of propylene)
IT Zeolites, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(ZSM 23, gas-phase process for manufacture of isopropanol by hydration of propylene)
IT Zeolites, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(ZSM 35, gas-phase process for manufacture of isopropanol by hydration of propylene)
IT Zeolites, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(ZSM 5, gas-phase process for manufacture of isopropanol by hydration of propylene)
IT Zeolites, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(ferrierite-type, gas-phase process for manufacture of isopropanol by hydration of propylene)
IT **67-63-0P**, Isopropanol, preparation
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(gas-phase process for manufacture of isopropanol by hydration of propylene)
IT **115-07-1**, Propylene, reactions 7732-18-5, Water, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(gas-phase process for manufacture of isopropanol by hydration of propylene)
IT **67-63-0P**, Isopropanol, preparation
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(gas-phase process for manufacture of isopropanol by hydration of propylene)
RN 67-63-0 HCAPLUS
CN 2-Propanol (9CI) (CA INDEX NAME)



IT **115-07-1**, Propylene, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(gas-phase process for manufacture of isopropanol by hydration of propylene)
RN 115-07-1 HCAPLUS
CN 1-Propene (9CI) (CA INDEX NAME)

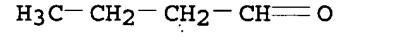


L31 ANSWER 38 OF 53 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1995:964998 HCAPLUS
DN 124:59867
TI Process for the production of oxo products
IN Ramachandran, Ramakrishnan; Dao, Loc H.
PA The BOC Group, Inc., USA
SO U.S., 10 pp. Cont.-in-part of U.S. Ser. No. 129,527, abandoned
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 2

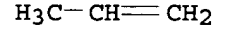
| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | US 5463137 | A | 19951031 | US 1994-231546 | 19940422 |
| | CA 2130387 | A1 | 19950331 | CA 1994-2130387 | 19940818 |
| | ZA 9406374 | A | 19950606 | ZA 1994-6374 | 19940822 |
| | NO 9403370 | A | 19950331 | NO 1994-3370 | 19940912 |
| | EP 648730 | A1 | 19950419 | EP 1994-307011 | 19940926 |
| | EP 648730 | B1 | 20001206 | | |
| | R: BE, DE, ES, FR, GB, IE, IT, NL, SE | | | | |
| | IN 185839 | A1 | 20010505 | IN 1994-MA942 | 19940927 |
| | FI 9404507 | A | 19950331 | FI 1994-4507 | 19940929 |
| | HU 71053 | A2 | 19951128 | HU 1994-2791 | 19940929 |
| | JP 07196571 | A | 19950801 | JP 1994-237088 | 19940930 |
| | CN 1106786 | A | 19950816 | CN 1994-116997 | 19940930 |
| | CN 1073075 | B | 20011017 | | |
| | CZ 283957 | B6 | 19980715 | CZ 1994-2407 | 19940930 |
| | CZ 283982 | B6 | 19980715 | CZ 1997-1333 | 19940930 |
| PRAI | US 1993-129527 | B2 | 19930930 | | |
| | US 1994-231546 | A | 19940422 | | |

AB A **propylene stream** which contains propane as an impurity is contacted with carbon monoxide and hydrogen in the presence of a hydroformylation **catalyst** thereby producing a product stream containing butyraldehyde and/or Bu alc., unreacted propylene and propane. A gas mixture containing propylene and propane is separated from the product stream and subjected to adsorption at 0-250° in a bed of adsorbent which selectively adsorbs propylene. The propylene is desorbed from the adsorbent and recycled to the reaction zone. The process is operated on a low per pass conversion with recycle of unreacted propylene. The **propylene** adsorption unit may be **upstream** or downstream of the hydroformylation reactor.
IC ICM C07C045-50

ICS C07C051-14; C07C029-14
INCL 568454000
CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
ST propylene oxo reaction process
IT Adsorption
(propylene recycle by; hydroformylation of **propylene stream** for production of oxo products)
IT 71-36-3P, Butyl alcohol, preparation **123-72-8P**, Butyraldehyde
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(hydroformylation of **propylene stream** for production of oxo products)
IT **115-07-1**, **Propylene**, reactions
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); **RACT (Reactant or reagent)**
(hydroformylation of **propylene stream** for production of oxo products)
IT **123-72-8P**, Butyraldehyde
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(hydroformylation of **propylene stream** for production of oxo products)
RN 123-72-8 HCAPLUS
CN Butanal (9CI) (CA INDEX NAME)



IT **115-07-1**, **Propylene**, reactions
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); **RACT (Reactant or reagent)**
(hydroformylation of **propylene stream** for production of oxo products)
RN 115-07-1 HCAPLUS
CN 1-Propene (9CI) (CA INDEX NAME)



L31 ANSWER 39 OF 53 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1995:781794 HCAPLUS
DN 123:170531
TI Controlled epoxidation of propylene with tert-Bu hydroperoxide
IN Wu, Chung Nan T.; Taylor, Mark E.; Mueller, Mark A.
PA Texaco Chemical Co., USA
SO U.S., 10 pp.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | US 5410077 | A | 19950425 | US 1993-148226 | 19931108 |
| | CA 2129711 | A1 | 19950509 | CA 1994-2129711 | 19940808 |
| | EP 657445 | A1 | 19950614 | EP 1994-308160 | 19941104 |
| | EP 657445 | B1 | 19990303 | | |
| | R: DE, FR, GB | | | | |
| | JP 07188200 | A | 19950725 | JP 1994-273472 | 19941108 |
| PRAI | US 1993-148226 | A | 19931108 | | |

AB In a regulated process wherein propylene is reacted with tert-Bu hydroperoxide in solution in tert-Bu alc. to produce propylene oxide and tert-Bu alc. in a reactor system comprising a first isothermal segment comprising a plurality of at least four sequentially interconnected internally cooled reactors, and a second adiabatic segment, an initial feed mixture is continuously charged to the first reactor, comprising **propylene** and a recycle **stream** composed of about 25 to about 75 weight % of the combined weight of said **propylene** and said recycle **stream**, a plurality of feed streams comprising a tert-Bu alc. solution of tert-Bu hydroperoxide and molybdenum **catalyst** are charged to each of at least four sequentially interconnected reactors, and about 60 to 80 wt % of the tert-Bu hydroperoxide is converted in the isothermal segment; the recycle stream being removed at the end of the isothermal segment and the remainder of the intermediate reaction mixture being passed through the adiabatic segment where addnl. tert-Bu hydroperoxide is converted.

IC ICM C07D301-19
ICS C07D303-04; C07C027-16; C07C031-12

INCL 549529000

CC 35-2 (Chemistry of Synthetic High Polymers)

ST propylene epoxidn control; butyl hydroperoxide propylene epoxidn; oxide propylene prepn epoxidn control; alc butyl prepn epoxidn control

IT Epoxidation
Process control and dynamics
(controlled epoxidn. of propylene with tert-Bu hydroperoxide)

IT 7439-98-7, Molybdenum, uses
RL: **CAT (Catalyst use)**; USES (Uses)
(controlled epoxidn. of propylene with tert-Bu hydroperoxide)

IT **75-56-9P**, Propylene oxide, preparation 75-65-0P, preparation
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(controlled epoxidn. of propylene with tert-Bu hydroperoxide)

IT 75-91-2 **115-07-1**, Propylene, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(controlled epoxidn. of propylene with tert-Bu hydroperoxide)

IT **75-56-9P**, Propylene oxide, preparation
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(controlled epoxidn. of propylene with tert-Bu hydroperoxide)

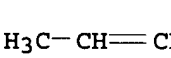
RN 75-56-9 HCAPLUS

CN Oxirane, 2-methyl- (CA INDEX NAME)

IT **115-07-1**, Propylene, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(controlled epoxidn. of propylene with tert-Bu hydroperoxide)

RN 115-07-1 HCAPLUS

CN 1-Propene (9CI) (CA INDEX NAME)



L31 ANSWER 40 OF 53 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 1995:559934 HCAPLUS

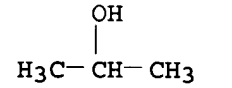
DN 122:295137

TI Two-stage process for producing diisopropyl ether using hydration
IN Marker, Terry L.
PA UOP Inc., USA
SO U.S., 7 pp.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | US 5399788 | A | 19950321 | US 1993-171573 | 19931222 |
| | EP 733615 | A1 | 19960925 | EP 1995-301893 | 19950320 |
| | EP 733615 | B1 | 20020619 | | |
| | R: BE, DE, ES, FR, GB, IT, NL | | | | |
| PRAI | US 1993-171573 | | 19931222 | | |

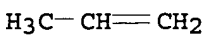
AB In process for the production of diisopropyl ether, a **propylene**-containing **stream** is contacted with iso-PrOH in a first stage in the presence of a **catalyst** under conditions to produce an effluent stream comprising diisopropyl ether. At least a portion of this effluent stream is recycled to a second stage where the diisopropyl ether is reacted with water to produce iso-Pr alc. The iso-Pr alc. is then recycled to the first stage. The benefit of producing iso-Pr alc. by the hydration of diisopropyl ether is that it is an easier reaction than, for example, the hydration of propylene. As a result, the process of the present invention can operate under less severe conditions, i.e., less cost.

IC ICM C07C041-06
INCL 568697000
CC 51-7 (Fossil Fuels, Derivatives, and Related Products)
ST diisopropyl ether two stage prodn
IT Gasoline additives
(antiknock, IPA and DIPE; two-stage process for producing diisopropyl ether using hydration)
IT **67-63-0P**, Isopropyl alcohol, preparation
RL: PUR (Purification or recovery); RCT (Reactant); **PREP (Preparation)**; RACT (Reactant or reagent)
(in two-stage process for producing diisopropyl ether using hydration)
IT **115-07-1**, Propylene, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(in two-stage process for producing diisopropyl ether using hydration)
IT 108-20-3P, Diisopropyl ether
RL: IMF (Industrial manufacture); PREP (Preparation)
(octane enhancers; two-stage process for producing diisopropyl ether using hydration)
IT **67-63-0P**, Isopropyl alcohol, preparation
RL: PUR (Purification or recovery); RCT (Reactant); **PREP (Preparation)**; RACT (Reactant or reagent)
(in two-stage process for producing diisopropyl ether using hydration)
RN 67-63-0 HCAPLUS
CN 2-Propanol (9CI) (CA INDEX NAME)



IT **115-07-1**, Propylene, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(in two-stage process for producing diisopropyl ether using hydration)

RN 115-07-1 HCAPLUS
CN 1-Propene (9CI) (CA INDEX NAME)



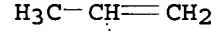
L31 ANSWER 41 OF 53 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1990:533047 HCAPLUS
DN 113:133047
TI Process and apparatus for minimizing fluidized bed **catalyst** loss in an olefin ammoxidation process
IN Braun, John Ferrell; Nowak, Robert Thomas
PA Monsanto Co., USA
SO Eur. Pat. Appl., 8 pp.
CODEN: EPXXDW
DT Patent
LA English
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | EP 376912 | A2 | 19900704 | EP 1989-870216 | 19891221 |
| | EP 376912 | A3 | 19900919 | | |
| | EP 376912 | B1 | 19940914 | | |
| | R: DE, ES, FR, GB, IT, NL | | | | |
| | ES 2017452 | T3 | 19950101 | ES 1989-870216 | 19891221 |
| | CA 2006815 | A1 | 19900629 | CA 1989-2006815 | 19891228 |
| | JP 02231459 | A | 19900913 | JP 1989-345047 | 19891228 |
| | JP 2968810 | B2 | 19991102 | | |
| | BR 8906819 | A | 19900918 | BR 1989-6819 | 19891228 |
| | US 5079379 | A | 19920107 | US 1990-540381 | 19900618 |
| PRAI | US 1988-291892 | A | 19881229 | | |

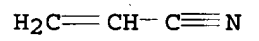
AB In the manufacture of acrylonitrile from propylene in a fluidized bed catalytic reactor, a gaseous feed **stream** containing **propylene**, ammonia, and O is charged to a fluidized bed of a particulate **catalyst** in a reactor system having a cyclone means downstream of the fluidized bed for separation of entrained particles from the gaseous stream exiting the fluidized bed. The process improvement is that **catalyst** is mixed with a discrete inert particulate material in an amount and having particle sizes and densities selected so that the **catalyst** losses are ≥25% lower than in a control system containing no inert material. The inert material is present in an amount of 5-40% (based on the **catalyst** weight) and has a median particle size of 15-55 μm. The ammoxidn. **catalyst** is represented for the formula SbaUbFecBidMoeMfOg (M = Ni, Co; a = 1-10; b, c = 0.1-5; d, e = 0.001-0.1; f = 0-0.1; g = number which satisfies the metal valencies).

IC ICM B01J008-32
ICS B01J023-88; C07C253-26
CC 35-2 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 23, 48, 67
ST acrylonitrile manuf propylene ammoxidn; cyclone **catalyst** sepn ammoxidn process
IT Ammoxidation **catalysts**
(antimony-bismuth-cobalt or nickel-iron-molybdenum-uranium oxides, for conversion of propylene to acrylonitrile, cyclone separation of, for reduced **catalyst** loss)
IT 7664-41-7, Ammonia, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(ammoxidn. by, of propylene, **catalysts** for)

IT **115-07-1**, Propylene, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(ammoxidn. of, acrylonitrile from, **catalysts** for, cyclone application for prevention of **catalyst** loss in)
IT 7439-89-6, Iron, uses and miscellaneous 7439-98-7, Molybdenum, uses and miscellaneous 7440-02-0, Nickel, uses and miscellaneous 7440-36-0, Antimony, uses and miscellaneous 7440-48-4, Cobalt, uses and miscellaneous 7440-61-1, Uranium, uses and miscellaneous 7440-69-9, Bismuth, uses and miscellaneous
RL: **CAT (Catalyst use)**; USES (Uses)
(**catalysts**, for ammoxidn. of propylene to acrylonitrile, cyclone separation of, for reduction of **catalyst** loss)
IT **107-13-1P**, Acrylonitrile, preparation
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(manufacture of, by propylene ammoxidn., **catalysts** for, cyclone application for **catalysts** separation and loss reduction in)
IT **115-07-1**, Propylene, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(ammoxidn. of, acrylonitrile from, **catalysts** for, cyclone application for prevention of **catalyst** loss in)
RN 115-07-1 HCAPLUS
CN 1-Propene (9CI) (CA INDEX NAME)



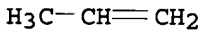
IT **107-13-1P**, Acrylonitrile, preparation
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(manufacture of, by propylene ammoxidn., **catalysts** for, cyclone application for **catalysts** separation and loss reduction in)
RN 107-13-1 HCAPLUS
CN 2-Propenenitrile (9CI) (CA INDEX NAME)



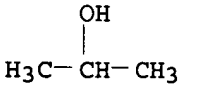
L31 ANSWER 42 OF 53 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1989:576743 HCAPLUS
DN 111:176743
TI Preparation of isopropanol by catalytic hydration of propylene
IN Marler, David O.; Sorensen, Charles M.; Varghese, Philip
PA Mobil Oil Corp., USA
SO Eur. Pat. Appl., 8 pp.
CODEN: EPXXDW
DT Patent
LA English
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | EP 323269 | A1 | 19890705 | EP 1988-312426 | 19881230 |
| | EP 323269 | B1 | 19921028 | | |
| | R: BE, DE, FR, GB, IT, NL, SE | | | | |
| | JP 01246234 | A | 19891002 | JP 1988-332689 | 19881228 |
| | ZA 8809686 | A | 19900829 | ZA 1988-9686 | 19881228 |
| | AU 8827656 | A | 19890706 | AU 1988-27656 | 19881230 |
| | AU 611515 | B2 | 19910613 | | |
| | CN 1035493 | A | 19890913 | CN 1989-101116 | 19881230 |

US 4967020 A 19901030 US 1989-389198 19890803
PRAI US 1987-139565 A 19871230
AB Propylene (I) is converted to iso-PrOH by contacting a feed containing I with H2O at H2O:I mole ratio 0.1-1 in the vapor and/or liquid phase in the presence of zeolite ZSM-35 **catalyst.** Thus, I was reacted with H2O in 1:2 mol ratio in the presence of alumina-bound ZSM-35 **catalyst** at 166° and 70 bars resulting in 55.1% I conversion and 99.5% alc. selectivity, compared with 8.7 and 98.7, resp. using alumina-bound ferrierite at the same molar ratio of a reactants instead of ZSM-35.
IC ICM C07C029-04
ICS C07C031-10
CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
Section cross-reference(s): 67
ST hydration propylene zeolite **catalyst**; isopropanol manuf propylene catalytic hydration
IT Hydration **catalysts**
(modified zeolite ZSM-35, for propylene)
IT Zeolites, uses and miscellaneous
RL: **CAT (Catalyst use)**; USES (Uses)
(ZSM 35, **catalysts**, for hydration of propylene, to isopropanol)
IT 1344-28-1, Alumina, uses and miscellaneous 7631-86-9, Silica, uses and miscellaneous
RL: USES (Uses)
(binders, ZSM-35 zeolite containing, **catalysts**, for hydration of propylene)
IT **115-07-1**, Propylene, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(hydration of, catalytic, isopropanol manufacture by)
IT **67-63-0P**, Isopropanol, preparation
RL: **PREP (Preparation)**
(manufacture of, by catalytic hydration of **propylene**, **streamlined** method for)
IT 1335-30-4
RL: USES (Uses)
(zeolites, ZSM 35, **catalysts**, for hydration of propylene, to isopropanol)
IT **115-07-1**, Propylene, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(hydration of, catalytic, isopropanol manufacture by)
RN 115-07-1 HCAPLUS
CN 1-Propene (9CI) (CA INDEX NAME)



IT **67-63-0P**, Isopropanol, preparation
RL: **PREP (Preparation)**
(manufacture of, by catalytic hydration of **propylene**, **streamlined** method for)
RN 67-63-0 HCAPLUS
CN 2-Propanol (9CI) (CA INDEX NAME)

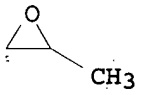


L31 ANSWER 43 OF 53 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1986:562141 HCAPLUS
DN 105:162141
TI Selective oxidation of olefins with photochemical illumination of semiconductor powder suspensions
IN Ward, Michael D.; Brazdil, James F., Jr.; Grasselli, Robert K.
PA Standard Oil Co., USA
SO U.S., 6 pp.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 1

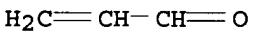
| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI US 4571290 | A | 19860218 | US 1984-643149 | 19840822 |
| PRAI US 1984-643149 | | 19840822 | | |

OS MARPAT 105:162141
AB Selective oxidation of olefins is carried out by the steps of forming a suspension of a semiconductor powder in a solvent, adding an olefin and an oxidant to the suspension, and photochem. activating the suspension with illumination having an energy at least equal to the band gap of the semiconductor powder. The semiconductor powder has the general formula AxByCz where A is selected from Bi, Sn, Pt, Pd, Cu, Fe, W, V, Sb, Mo, Ru or Ag and mixts. thereof; B is selected from Te, Sb, Ti, Cd, Mo, V or W and mixts thereof; C is O or S; x equals 0-5; y equals 1-3; and z is a number to satisfy the other elements and is optionally metalized by an element selected from Pt, Pd, Cu, or Ag. The selectivity of the oxidation is controlled by nature of the semiconductor powder, the solvent, and the oxidant. Thus, a TiO2 semiconductor powder 100 mg was suspended in H2O 10 mL, purged with O, **propylene** introduced to the O **stream** at a **propylene**-O ratio of 1:4 at a flow rate of 1.2 mL/min, and illuminated with a 500-W Hg lamp for 3 h to give a product mixture of acetaldehyde 78.5, propylene oxide 18.2, and allyl alc. 3.3 mol.%.
IC ICM B01J019-12
INCL 204157690
CC 74-1 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
ST photochem oxidn olefin semiconductor powder
IT Oxidation, photochemical
(of olefins in aqueous suspensions of semiconductor powders)
IT Alkenes, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(photochem. oxidation of, in aqueous suspensions of semiconductor powders)
IT Oxidation **catalysts**
(photochem., semiconductors, for olefins)
IT 286-20-4P 930-68-7P
RL: FORM (Formation, nonpreparative); PREP (Preparation)
(formation of, in photooxidn. of cyclohexane in aqueous suspension of titanium dioxide powder)
IT 75-07-0P, preparation **75-56-9P**, preparation 107-18-6P, preparation
RL: FORM (Formation, nonpreparative); **PREP (Preparation)**
(formation of, in photooxidn. of propylene in aqueous suspension of titanium dioxide powder)
IT **107-02-8P**, preparation 123-38-6P, preparation
RL: FORM (Formation, nonpreparative); **PREP (Preparation)**
(formation of, in photooxidn. of propylene in aqueous suspension of titanium powder in presence of copper(2+) ion)

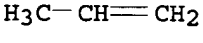
IT 12408-02-5, uses and miscellaneous 20074-52-6, uses and miscellaneous
22537-31-1, uses and miscellaneous 22537-50-4, uses and miscellaneous
RL: USES (Uses)
(oxidant, in photooxidn. of olefins in aqueous dispersions of semiconductor powders)
IT 1313-27-5, uses and miscellaneous 7440-06-4, uses and miscellaneous
13463-67-7, uses and miscellaneous
RL: **CAT (Catalyst use)**; USES (Uses)
(photooxidn. **catalyst**, for propylene and cyclohexane)
IT 15158-11-9, uses and miscellaneous
RL: USES (Uses)
(photooxidn. of propylene and cyclohexane in aqueous suspension of titanium dioxide powder in presence of)
IT 110-82-7, reactions **115-07-1**, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(photooxidn. of, in aqueous suspension of titanium dioxide powder)
IT **75-56-9P**, preparation
RL: FORM (Formation, nonpreparative); **PREP (Preparation)**
(formation of, in photooxidn. of propylene in aqueous suspension of titanium dioxide powder)
RN 75-56-9 HCAPLUS
CN Oxirane, 2-methyl- (CA INDEX NAME)



IT **107-02-8P**, preparation
RL: FORM (Formation, nonpreparative); **PREP (Preparation)**
(formation of, in photooxidn. of propylene in aqueous suspension of titanium powder in presence of copper(2+) ion)
RN 107-02-8 HCAPLUS
CN 2-Propenal (9CI) (CA INDEX NAME)



IT **115-07-1**, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(photooxidn. of, in aqueous suspension of titanium dioxide powder)
RN 115-07-1 HCAPLUS
CN 1-Propene (9CI) (CA INDEX NAME)



L31 ANSWER 44 OF 53 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1983:470356 HCAPLUS
DN 99:70356
TI Selective alkylation of aromatic hydrocarbons using a mixed ethylene/propylene alkylation agent
IN Barile, George C.
PA Mobil Oil Corp. , USA
SO U.S., 7 pp.
CODEN: USXXAM

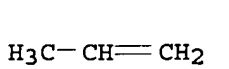
DT Patent
LA English
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | US 4387259 | A | 19830607 | US 1981-283863 | 19810716 |
| PRAI | US 1981-283863 | | 19810716 | | |

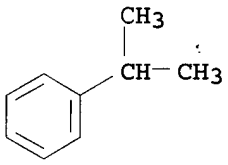
AB ZSM-12 zeolite was used as a **catalyst** for selectively alkylating C6H6 with ethylene-propylene mixed feed to give an alkylated product rich in propylated benzenes and an olefin product enriched in ethylene and free of reactive propylene. Thus, C6H6 was alkylated with an ethylene stream (CH4 44.4, C2H6 20.7, ethylene 18.3, N 16.5, and CO2 0.11 mol%) and a **propylene stream** (1:1 weight ratio of C3H8 and propylene) (C6H6/ethylene/propylene molar feed ratio 6.6/0.75/1.00) with HZSM-12 zeolite **catalyst** at 210° and atmospheric pressure. Propylene conversion was 100% and ethylene conversion was very low. Propylene conversion to propylated benzenes was 98%, selectivity (cumene/cumene + diisopropylbenzene) was 90%, and selectivity (cumene/cumene + PhEt) was 99%.

IC C07C003-52
INCL 585467000
CC 25-2 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)
ST alkylation arom hydrocarbon zeolite; benzene alkylation ethylene propylene; cumene; isopropylbenzene; isopropylation benzene propylene ethylene
IT Aromatic hydrocarbons, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(alkylation of, selective, with propylene-ethylene mixed feed, zeolite **catalysts** for)
IT Isopropylation
(of benzene with propylene-ethylene mixed feed)
IT Alkylation
(selective, of aromatic hydrocarbons with propylene-ethylene mixed feed)
IT Isopropylation **catalysts**
(zeolites, for benzene with propylene-ethylene mixed feed)
IT Alkylation **catalysts**
(zeolites, selective, for aromatic hydrocarbon propylene-ethylene mixed feed)
IT Zeolites, uses and miscellaneous
RL: **CAT (Catalyst use)**; USES (Uses)
(ZSM 12, **catalysts**, for selective alkylation of benzene with ethylene-propylene mixed feed)
IT **115-07-1**, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(alkylation by mixed feed containing ethylene and, of benzene, zeolite **catalysts** for)
IT 74-85-1, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(alkylation by mixed feed containing propylene and, of benzene, zeolite **catalysts** for)
IT 71-43-2, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(alkylation of, selective, with ethylene-propylene mixed feed, zeolite **catalysts** for)
IT **98-82-8P** 100-18-5P 25321-09-9P
RL: SPN (Synthetic preparation); **PREP (Preparation)**
(preparation of, by alkylation of benzene with propylene-ethylene mixed feed, zeolite **catalysts** for)
IT **115-07-1**, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**

(alkylation by mixed feed containing ethylene and, of benzene, zeolite **catalysts** for)
RN 115-07-1 HCAPLUS
CN 1-Propene (9CI) (CA INDEX NAME)



IT **98-82-8P**
RL: SPN (Synthetic preparation); **PREP (Preparation)**
(preparation of, by alkylation of benzene with propylene-ethylene mixed feed, zeolite **catalysts** for)
RN 98-82-8 HCAPLUS
CN Benzene, (1-methylethyl)- (9CI) (CA INDEX NAME)

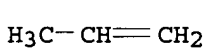


L31 ANSWER 45 OF 53 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1983:4882 HCAPLUS
DN 98:4882
TI Soluble molybdenum **catalysts** for olefin epoxidation
IN Mocella, Michael Thomas
PA Atlantic Richfield Co., USA
SO Eur. Pat. Appl., 20 pp.
CODEN: EPXXDW
DT Patent
LA English
FAN.CNT 1

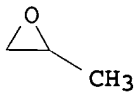
| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | EP 58473 | A1 | 19820825 | EP 1982-300317 | 19820121 |
| | EP 58473 | B1 | 19850904 | | |
| | R: BE, DE, FR, GB, IT, NL | | | | |
| | CA 1194494 | A1 | 19851001 | CA 1982-394333 | 19820118 |
| | JP 57140653 | A | 19820831 | JP 1982-8226 | 19820121 |
| | BR 8200300 | A | 19821123 | BR 1982-300 | 19820121 |
| | US 4661463 | A | 19870428 | US 1984-649571 | 19840912 |
| PRAI | US 1981-227116 | A | 19810121 | | |
| | US 1982-387319 | A1 | 19820611 | | |

OS MARPAT 98:4882
AB A soluble Mo-containing **catalyst** for the hydroperoxide epoxidn. of olefins is regenerated and recycled from a spent **catalyst** solution by thermally precipitating and separating a Mo-containing solid from the solution, then solubilizing the solid in a liquid OH-containing organic compound by heating to produce an active **catalyst** solution Thus, 0.656 parts of a thermally precipitated Mo-containing solid from a spent **catalyst stream** for the epoxidn. of **propylene** [115-07-1] was treated with MeOH [67-56-1] 23, a 40% solution of tert-Bu hydroperoxide in tert-BuOH [75-65-0] 5, and propylene glycol [57-55-6] 4 parts at 60° for 30 min. The reaction mixture was filtered and distilled at

110° to give a solution containing 47,500 ppm Mo, 48% propylene glycol, and 42.2% tert-BuOH, suitable for reuse in the epoxidn.
IC C07D301-19; B01J023-92
CC 35-2 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 23, 27
ST regeneration molybdenum **catalyst** epoxidn olefin; solubilization molybdenum **catalyst** regeneration; propylene epoxidn molybdenum **catalyst** regeneration
IT Epoxidation **catalysts**
(molybdenum, for propylene, regeneration of)
IT 7439-98-7, uses and miscellaneous
RL: **CAT (Catalyst use)**; USES (Uses)
(**catalysts**, for epoxidn. of propylene, solubilization in regeneration of)
IT **115-07-1**, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(epoxidn. of, regeneration of molybdenum **catalysts** for)
IT 57-55-6, uses and miscellaneous 67-56-1, uses and miscellaneous
75-65-0, uses and miscellaneous
RL: USES (Uses)
(in regeneration of molybdenum **catalyst** for propylene epoxidn.)
IT **75-56-9P**, preparation
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(manufacture of, by epoxidn. of propylene, regeneration of molybdenum **catalyst** in)
IT **115-07-1**, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(epoxidn. of, regeneration of molybdenum **catalysts** for)
RN 115-07-1 HCAPLUS
CN 1-Propene (9CI) (CA INDEX NAME)



IT **75-56-9P**, preparation
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(manufacture of, by epoxidn. of propylene, regeneration of molybdenum **catalyst** in)
RN 75-56-9 HCAPLUS
CN Oxirane, 2-methyl- (CA INDEX NAME)



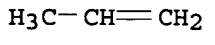
L31 ANSWER 46 OF 53 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1977:423939 HCAPLUS
DN 87:23939
TI Acrylonitrile
IN Umemura, Sumio; Odan, Kyoji; Uda, Taizo; Matsuzaki, Tokuo; Hidaka, Mikio; Nakamura, Yasuo; Sawaji, Masao
PA Ube Industries, Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DT Patent

LA Japanese
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | JP 52031025 | A | 19770309 | JP 1975-107084 | 19750905 |
| | JP 57005787 | B | 19820201 | | |
| | FR 2322855 | A1 | 19770401 | FR 1976-26665 | 19760903 |
| | FR 2322855 | B1 | 19790511 | | |
| PRAI | JP 1975-107084 | A | 19750905 | | |

AB H2C:CHCN (I) [107-13-1] is prepared by vapor-phase reaction of propylene [115-07-1] with O and NH3 at high temps. in the presence of **catalysts** comprising MoaCobFecXdOe (X = Ca, W, Cr, Zn, Mn, or Sn; a-e are in such ratio that when a = 12, then b = 4-10, c = 1-6, d = 0-1.0, and e = 40-70) calcined at 500-700°. Thus, an aqueous mixture of (NH4)6Mo7O24.4H2O 90.0, Co(NO3)2.6H2O 104.9, and Fe(NO3)3.9H2O 41.6 g gave a precipitate, which was aged overnight, dried, 2 weight% graphite added, the mixture molded, and calcined 5 h at 600° to form a **catalyst** (Mo:Co:Fe = 12:8.4:2.4). A 330 mL/min gaseous mixture of **propylene** -NH3-air-**stream** (10:11:119:25 molar) was passed over 12 mL of the **catalyst** at 390° with a 2.1-s contact period to give 73.1% I with 90.2% propylene conversion and 81.0% selectivity to I.

IC C07C121-32
CC 35-2 (Synthetic High Polymers)
Section cross-reference(s): 23
ST acrylonitrile manuf **catalyst**; propylene ammoxidn **catalyst**
IT Ammoxidation **catalysts**
(cobalt-iron-molybdenum-transition metal mixed oxides, for propylene)
IT **115-07-1**, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(ammoxidn. of, **catalysts** for)
IT **107-13-1P**, preparation
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(manufacture of, **catalysts** for)
IT 7439-89-6, uses and miscellaneous 7439-96-5, uses and miscellaneous
7439-98-7, uses and miscellaneous 7440-31-5, uses and miscellaneous
7440-32-6, uses and miscellaneous 7440-33-7, uses and miscellaneous
7440-47-3, uses and miscellaneous 7440-48-4, uses and miscellaneous
7440-66-6, uses and miscellaneous 7440-67-7, uses and miscellaneous
7440-70-2, uses and miscellaneous
RL: **CAT (Catalyst use)**; USES (Uses)
(oxide **catalysts** containing, for ammoxidn of propylene)
IT **115-07-1**, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(ammoxidn. of, **catalysts** for)
RN 115-07-1 HCAPLUS
CN 1-Propene (9CI) (CA INDEX NAME)



IT **107-13-1P**, preparation
RL: IMF (Industrial manufacture); **PREP (Preparation)**
(manufacture of, **catalysts** for)
RN 107-13-1 HCAPLUS
CN 2-Propenenitrile (9CI) (CA INDEX NAME)

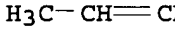
$H_2C{=}CH{-}C{\equiv}N$

L31 ANSWER 47 OF 53 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1974:27648 HCAPLUS
DN 80:27648
TI Propylene oxide
IN Kolombos, Alexander J.; McCain, Colin C.
PA BP Chemicals International Ltd.
SO Brit., 5 pp.
CODEN: BRXXAA
DT Patent
LA English
FAN.CNT 1

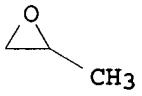
| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | GB 1327497 | A | 19730822 | GB 1971-29395 | 19720525 |
| PRAI | GB 1971-29395 | A | 19720525 | | |

AB Contacting a gaseous **stream** of **propylene** [115-07-1] 2.50-4.2, O 12.95-96.82, and He 0-84.32 volume % with a **catalyst** of silver [7440-22-4] and a Group II metal halide 6.48-28.7 sec at 153-287.deg. increased the selectivity of propylene oxide [75-56-9] formation. The reaction partially converted CH2:CHMe to the oxide which was trapped. Unreacted CH2:CHMe was recycled. Thus, contacting CH2:CHMe 3.12, O 20.96, and He 75.91 volume % 10.4 sec at 256.deg. with Ag containing 6.9 weight % mercuric chloride [7487-94-7] gave propylene oxide with 12.05% selectivity.

IC C07D
CC 35-2 (Synthetic High Polymers)
Section cross-reference(s): 27
ST propylene epoxidn **catalyst**; silver **catalyst** epoxidn propylene; calcium halide **catalyst** epoxidn; mercury chloride **catalyst** epoxidn; barium chloride **catalyst** epoxidn; magnesium chloride **catalyst** epoxidn; oxide propylene
IT Epoxidation **catalysts**
(silver-Group II metal halide, for propylene)
IT 7487-94-7 7778-54-3 7786-30-3, uses and miscellaneous 7789-75-5, uses and miscellaneous 10043-52-4, uses and miscellaneous 10361-37-2
RL: USES (Uses)
(**catalysts** containing silver and, for epoxidn. of propylene)
IT 7440-22-4, uses and miscellaneous
RL: **CAT (Catalyst use)**; USES (Uses)
(**catalysts**, containing Group II metal halides and, for epoxidn. of propylene)
IT **115-07-1**, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(epoxidn. of, catalytic)
IT **75-56-9P**, preparation
RL: **PREP (Preparation)**
(preparation of)
IT **115-07-1**, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(epoxidn. of, catalytic)
RN 115-07-1 HCAPLUS
CN 1-Propene (9CI) (CA INDEX NAME)



IT **75-56-9P**, preparation
RL: **PREP (Preparation)**
(preparation of)
RN 75-56-9 HCAPLUS
CN Oxirane, 2-methyl- (CA INDEX NAME)

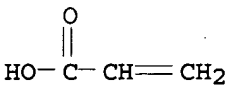


L31 ANSWER 48 OF 53 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1973:71454 HCAPLUS
DN 78:71454
TI Unsaturated carboxylic acids
IN Fujimoto, Kaoru; Kunugi, Taiseki
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

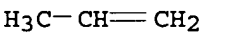
| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI JP 48000523 | B4 | 19730106 | JP 1971-34747 | 19710524 |

AB Unsatd. hydrocarbons of C3-5 were oxidized with O at <200° in the presence of steam using a **catalyst** (composed of Pd, an element belonging to group I, II, VIII, VIB, or VB) and a carrier. E.g., 5.1 g PdCl2 in dilute HCl was let stand with an activated C to give PdCl2 over C. It was reduced at 300° in H **stream** and a mixture of **propylene**, O, and H2O (1:1:5.6 by moles) were introduced at 145° for 15 hr to give 22% acrylic acid.
INCL 16B631
CC 23-16 (Aliphatic Compounds)
ST unsatn hydrocarbon carboxylic acid
IT Oxidation **catalysts**
(palladium carbon, for oxidation of propylene to acrylic acid)
IT 7647-10-1
RL: **CAT (Catalyst use)**; USES (Uses)
(**catalysts**, containing carbon for oxidation of propylene to acrylic acid)
IT 7440-44-0, uses and miscellaneous
RL: **CAT (Catalyst use)**; USES (Uses)
(**catalysts**, containing palladium chloride for oxidation of propylene to acrylic acid)
IT **79-10-7P**, preparation
RL: **PREP (Preparation)**
(from oxidation of propylene with palladium-carbon **catalysts**)
IT **115-07-1**, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(oxidation of, to acrylic acid)
IT **79-10-7P**, preparation
RL: **PREP (Preparation)**
(from oxidation of propylene with palladium-carbon **catalysts**)
RN 79-10-7 HCAPLUS

CN 2-Propenoic acid (9CI) (CA INDEX NAME)



IT **115-07-1**, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(oxidation of, to acrylic acid)
RN 115-07-1 HCAPLUS
CN 1-Propene (9CI) (CA INDEX NAME)

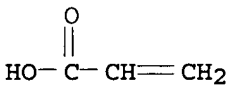


L31 ANSWER 49 OF 53 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1971:421490 HCAPLUS
DN 75:21490
TI Catalytic production of unsaturated acids and aldehydes
IN Eden, Jamal S.
PA Goodrich, B. F., Co.
SO U.S., 3 pp.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI US 3576857 | A | 19710427 | US 1967-683476 | 19671116 |
| PRAI US 1967-683476 | A | 19671116 | | |

AB An oxidation **catalyst** comprising a 3:1:2 mixture of MoO3, TeO2, and AlPO4 is used for the oxidation of **propylene** in air and **stream**, giving 100 conversion with acrolein and acrylic acid yields of 47 and 28, resp., at 375° and 23 and 30, resp., at 400°.
IC C07C
INCL 260533000
CC 35 (Synthetic High Polymers)
ST propylene oxidn **catalyst**; molybdenum trioxide oxidn **catalyst**; tellurium dioxide oxidn **catalyst**; aluminum phosphate oxidn **catalyst**; acrolein prepn; acrylic acid prepn
IT Oxidation **catalysts**
(aluminum phosphate-oxides, for propene)
IT **79-10-7P**, preparation **107-02-8P**, preparation
RL: **PREP (Preparation)**
(by oxidation of propene, **catalysts** for)
IT 1313-27-5, uses and miscellaneous 7446-07-3
RL: **CAT (Catalyst use)**; USES (Uses)
(**catalysts**, containing aluminum phosphate, for oxidation of propene)
IT 7784-30-7
RL: **CAT (Catalyst use)**; USES (Uses)
(**catalysts**, containing oxides, for oxidation of propene)
IT **115-07-1**, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(oxidation of, **catalysts** for)
IT **79-10-7P**, preparation **107-02-8P**, preparation

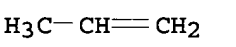
RL: **PREP (Preparation)**
(by oxidation of propene, **catalysts** for)
RN 79-10-7 HCAPLUS
CN 2-Propenoic acid (9CI) (CA INDEX NAME)



RN 107-02-8 HCAPLUS
CN 2-Propenal (9CI) (CA INDEX NAME)



IT **115-07-1**, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(oxidation of, **catalysts** for)
RN 115-07-1 HCAPLUS
CN 1-Propene (9CI) (CA INDEX NAME)

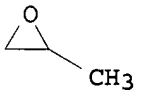


L31 ANSWER 50 OF 53 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1970:122191 HCAPLUS
DN 72:122191
TI Oxidation of propylene
IN Rai, Charanjit; Braunwarth, John B.; Kimble, Robert C.
PA Union Oil Co.
SO U.S., 3 pp.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 1

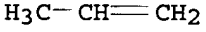
| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI US 3505359 | A | 19700407 | US 1964-386445 | 19640730 |
| PRAI US 1964-386445 | A | 19640730 | | |

AB A gaseous hydrocarbon mixture containing propylene (I) and O is passed over N d2O3 at elevated temperature and pressure to give a product **stream** containing **propylene** oxide (II). Thus, a 1:1 C6H6-I mixture was passed with 0.2 ft3 O/hr over 1 g Nd2O3 at 350°F and 600 psig for 0.5 hr to give 6.28 g II, a 27% yield based on unrecovered I. The **catalyst** did not degrade during the reaction and was optionally supported on Al2O3, SiO2, or pumice. Byproducts obtained included AcOH, HCO2H, HCO2Me, and C1-3 alcs.
IC C07D
INCL 260348500
CC 35 (Synthetic High Polymers)
ST oxidn propylene Nd oxide; neodymium oxide propylene oxidn; propylene oxidn catalytic
IT Oxidation **catalysts**
(neodymium oxide, for propene)
IT **75-56-9P**, preparation

RL: **PREP (Preparation)**
(**catalysts** for)
IT 1313-97-9
RL: **CAT (Catalyst use)**; USES (Uses)
(**catalysts**, for oxidation of propene)
IT **115-07-1**, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(oxidation of, **catalysts** for)
IT **75-56-9P**, preparation
RL: **PREP (Preparation)**
(**catalysts** for)
RN 75-56-9 HCAPLUS
CN Oxirane, 2-methyl- (CA INDEX NAME)



IT **115-07-1**, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(oxidation of, **catalysts** for)
RN 115-07-1 HCAPLUS
CN 1-Propene (9CI) (CA INDEX NAME)



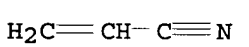
L31 ANSWER 51 OF 53 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1969:449346 HCAPLUS
DN 71:49346
TI Acrylonitrile or methacrylonitrile
IN Eden, Jamal S.
PA Goodrich, B. F., Co.
SO U.S., 3 pp.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | US 3445500 | A | 19690520 | US 1967-619173 | 19670228 |
| | NL 6801761 | A | 19680829 | NL 1968-1761 | 19680208 |
| | BE 711172 | A | 19680701 | BE 1968-711172 | 19680223 |
| | FR 1554520 | A | 19690117 | FR 1968-1554520 | 19680226 |
| | GB 1189752 | A | 19700429 | GB 1968-1189752 | 19680227 |
| PRAI | US 1967-619173 | A | 19670228 | | |

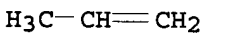
AB A **catalyst** comprising MoO3 (obtained from NH4 molybdate) 3, TeO2 1, ThP2O7 (prepared from Th nitrate and H3PO4) 1, and (optionally, as a support) SiO2 1 part is used for the preparation (at 390-415°) of acrylonitrile (58-67% yield) from a mixture of propylene (85-99% conversion/pass) 1, O (e.g., air) 1.5-4.0, and NH3 0.5-1.75 moles. Steam is also passed into the reactor to reduce the amts. of CO and CO2 in the effluent gases from the ammoxidn. The **catalyst** has a long active life. Thus, 450 ml. H2O containing 158.94 g. dissolved NH4 molybdate was treated with 100 ml. HCl containing 47.88 g. TeO2 followed by an aqueous solution

of 165.67 g. Th nitrate and 69.2 g. 85% H3PO4. The mixture was dried at 100°, calcined at 400° for 16 hrs., and ground to 10-18 mesh. A glass reactor was filled with 170 cc. of the **catalyst.** Steam at 200-50° was passed into the reactor along with a **stream** of **propylene** 1, NH3 1.07, and O (in air) 3.0 moles. The reactor temperature was 400°, and the contact time was 43.2 sec. The propylene conversion was 85.14%. The yields of acrylonitrile and acrylic acid were 66.78 and 3.76%, resp.

IC C07C; B01J
INCL 260465300
CC 23 (Aliphatic Compounds)
ST acrylonitrile prepn catalysis; methacrylonitrile prepn catalysis; molybdenum trioxide **catalysts**; tellurium dioxide **catalysts**; propylene ammonia reaction; ammonia propylene reaction
IT **Catalysts**
(molybdenum oxide-tellurium oxide-thorium pyrophosphate, for ammonia oxidative reaction with propene)
IT **107-13-1P**, preparation
RL: **PREP (Preparation)**
(by ammonia oxidative reaction with propene, **catalysts** for)
IT 1313-27-5, uses and miscellaneous 19183-41-6
RL: **CAT (Catalyst use)**; USES (Uses)
(**catalysts**, for ammonia oxidative reaction with propene)
IT **115-07-1**, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(oxidative, with ammonia, **catalysts** for)
IT 7664-41-7, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(oxidative, with propene, **catalysts** for)
IT **107-13-1P**, preparation
RL: **PREP (Preparation)**
(by ammonia oxidative reaction with propene, **catalysts** for)
RN 107-13-1 HCAPLUS
CN 2-Propenenitrile (9CI) (CA INDEX NAME)

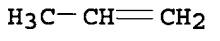


IT **115-07-1**, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(oxidative, with ammonia, **catalysts** for)
RN 115-07-1 HCAPLUS
CN 1-Propene (9CI) (CA INDEX NAME)

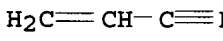


L31 ANSWER 52 OF 53 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1968:114029 HCAPLUS
DN 68:114029
TI Development of the technological preparation of a **catalyst** for the oxidative ammonolysis of propylene
AU Kolchin, I. K.; Gribov, A. M.
SO Khimicheskaya Promyshlennost (Moscow, Russian Federation) (1968), 44(2), 81-4
CODEN: KPRMAW; ISSN: 0023-110X
DT Journal

LA Russian
AB A continuous, conversion of a **stream** of 9-14% **propylene**, 10-15% NH3, 10-15% H2O, 15-20% O, and N to 100 at 460-70°, with a contact time of 4-5 sec. and 80-82% propylene conversion with 65-70% selectivity for acrylonitrile is described. The active **catalyst** system is a bismuth phosphomolybdate salt which is used partly as a 12-15 weight % layer on 50:50 kaolin-Al2O3 (27% total **catalyst** load) and the rest as a 50:50 copptd. uniform mass with silica gel. 28 references.
CC 23 (Aliphatic Compounds)
ST ACRYLONITRILES VIA PROPYLENE; PROPYLENE ACRYLONITRILES VIA
IT **115-07-1**, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(ammoxidn. of, **catalysts** for, bismuth molybdophosphate as)
IT 11099-01-7, Molybdophosphoric acid, bismuth salt
RL: **CAT (Catalyst use)**; USES (Uses)
(**catalysts**, for ammoxidn. of propene)
IT **107-13-1P**, preparation
RL: **PREP (Preparation)**
(manufacture of, by ammoxidn. of propene, **catalysts** for, bismuth molybdophosphate as)
IT 7664-41-7, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(oxidative, with propene, **catalysts** for, bismuth molybdophosphate as)
IT **115-07-1**, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(ammoxidn. of, **catalysts** for, bismuth molybdophosphate as)
RN 115-07-1 HCAPLUS
CN 1-Propene (9CI) (CA INDEX NAME)



IT **107-13-1P**, preparation
RL: **PREP (Preparation)**
(manufacture of, by ammoxidn. of propene, **catalysts** for, bismuth molybdophosphate as)
RN 107-13-1 HCAPLUS
CN 2-Propenenitrile (9CI) (CA INDEX NAME)



L31 ANSWER 53 OF 53 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1967:65133 HCAPLUS
DN 66:65133
TI Unsaturated aliphatic nitriles
IN Young, Howard Seth; McDaniel, Edgar L.
PA Eastman Kodak Co.
SO U.S., 6 pp.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | US 3293279 | | 19661220 | US 1964-375303 | 19640615 |

AB cf. CA 44, 653g; U.S. 2,904,580, 580, CA 54, 5470f. A mixture of 667 g. NH3-stabilized silica soluble (containing 30% silica) and 137 g. ammonium dodecamolybdocerate-8H2O was stirred and heated. Addition of 73.8 g. Mn(NO3)2.6H2O in 70 ml. H2O caused gelation. The gel was dispersed with 100 ml. H2O and 48.1 g. As2O5 in 150 ml. H2O was added. This was evaporated on a steam bath. Calcination was at 200° 2.75 hrs. and 500° 1.5 hrs. A fluidized bed of 150 ml. 40 + 120 mesh of this **catalyst** [8.2 MnO, 11.9 As2O5, 30.0 dodecamolybdoceric acid (I) and 49.9 weight % silica] was tested with a **stream** of 200 ml. **propylene**, 200 ml. NH3, 1500 ml. air, and 200 ml. H2O vapor/hr. at 472° (1.6 sec. contact time). In 30 min. 42.6% yield acrylonitrile (II), based on C3H6, was obtained. The **catalyst** was regenerated by a 30-min. heating at 430-50° in air. Similarly prepared **catalysts** containing As2O5, I, and silica gave comparable yields of II.

INCL 260465300

CC 23 (Aliphatic Compounds)

ST NITRILES ALIPH UNSATD; ACRYLONITRILES; UNSATD ALIPH NITRILES

IT **Catalysts**
(arsenic oxide-metal oxide-molybdoceric acid, for ammonia oxidative reaction with propene)

IT Boron oxide
RL: **CAT (Catalyst use)**; USES (Uses)
(**catalysts** from arsenic oxide, molybdoceric acid and, for propene ammoxidn.)

IT **115-07-1**, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(ammoxidn. of, **catalysts** for, arsenic oxide-metal oxide-molybdoceric acid as)

IT 12050-53-2
RL: **CAT (Catalyst use)**; USES (Uses)
(**catalysts** from arsenic oxide (As2O5), metal oxide and, for propene ammoxidn.)

IT 1308-38-9, uses and miscellaneous 1309-37-1, uses and miscellaneous 1313-13-9, uses and miscellaneous
RL: **CAT (Catalyst use)**; USES (Uses)
(**catalysts** from arsenic oxide, molybdoceric acid and, for propene ammoxidn.)

IT 1303-28-2
RL: **CAT (Catalyst use)**; USES (Uses)
(**catalysts** from metal oxide, molybdoceric acid (H8CeMo12O42) and, for propene ammoxidn.)

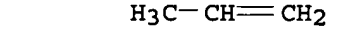
IT **107-13-1P**, preparation
RL: **PREP (Preparation)**
(manufacture of, from propene ammoxidn.)

IT 7664-41-7, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(oxidative, with propene, **catalysts** for, arsenic oxide (As2O5)-metal oxide-molybdoceric acid (H8CeMo12O42) as)

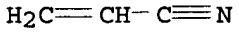
IT **115-07-1**, reactions
RL: RCT (Reactant); **RACT (Reactant or reagent)**
(ammoxidn. of, **catalysts** for, arsenic oxide-metal oxide-molybdoceric acid as)

RN 115-07-1 HCAPLUS

CN 1-Propene (9CI) (CA INDEX NAME)



IT **107-13-1P**, preparation
RL: **PREP (Preparation)**
(manufacture of, from propene ammoxidn.)
RN 107-13-1 HCAPLUS
CN 2-Propenenitrile (9CI) (CA INDEX NAME)



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